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U.S. GEOLOGICAL SURVEY

HAWAIIAN VOLCANO OBSERVATORY  
SUMMARY 89 PART I  
SEISMIC DATA, JANUARY TO DECEMBER 1989

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CHRONOLOGICAL SUMMARY  
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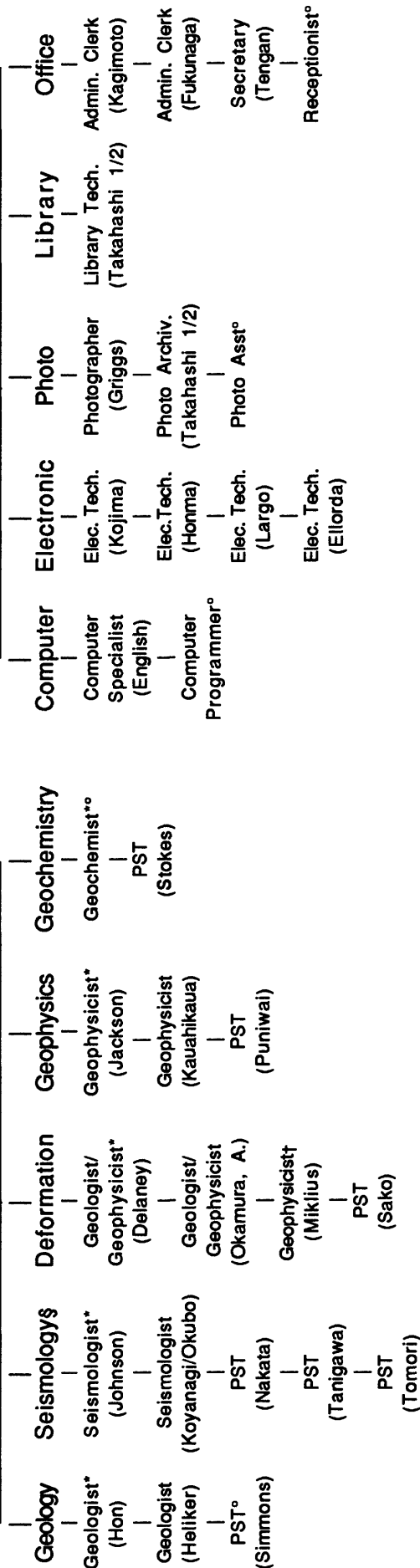
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Geologic map of the island of Hawaii

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## INTRODUCTION

The Hawaiian Volcano Observatory (HVO) summary presents data gathered during the year, with a chronological narrative describing the volcanic events and significant Observatory-related activities. The seismic summary is offered without interpretation as a source of preliminary data. The seismic summary is complete in the sense that all data of  $M \geq 1.5$  routinely gathered by the Observatory are included. The emphasis in collection of tilt and deformation data has shifted from quarterly measurements at a few water-tube tilt stations ("wet" tilt) to a larger number of continuously recording borehole tiltmeters, repeated measurements at numerous spirit-level tilt stations ("dry" tilt), and surveying of level and trilateration networks. Because of the large quantity of deformation data now gathered and differing schedules of data reduction, the seismic and deformation summaries are published separately.

The HVO summaries have been published in various forms since 1956. Summaries prior to 1974 were issued quarterly, but cost, convenience of preparation and distribution, and the large quantities of data dictated an annual publication beginning with Summary 74 for the year 1974. Summary 74 includes an extensive description of the seismic instrumentation, calibration, and processing used in recent years. The present summary includes enough background information on the seismic network and processing to allow use of the data and provide an understanding of how they were gathered.

A report tabulating the instrumentation, calibration and recording history of each seismic station in the network by Klein and Koyanagi is available as a USGS Open-File Report <sup>1</sup>. It is designed as a reference for users of seismograms and phase data and includes and augments the information in the station table in this summary.

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<sup>1</sup> Klein, F.W., and Koyanagi, R.Y., 1980, Hawaiian Volcano Observatory seismic network history, 1950-1979: U.S. Geological Survey Open-File Report 80-302, 84 p.

## CHRONOLOGICAL SUMMARY - 1989

by

Thomas L. Wright

Kilauea's ongoing Puu Oo-Kupaianaha eruption completed its seventh year in 1989. The eruption's vital statistics are summarized in Table C-1. Lava coverage from 1983 through the end of 1989 is shown in Figure C-1. MgO content and temperature of the lava are shown in Figure C-2a. The small variations in lava chemistry are still within a single set of olivine control lines, indicating that we are erupting the same batch of magma since at least 1984. We have been able to thoroughly document the growth of a volcanic field large enough to be preserved in the geologic record. Included in the geologic studies are the growth and loss of ephemeral features, such as littoral cones and lava deltas, as well as detailed study of the emplacement of both pahoehoe and aa. Puu Oo itself, once an anomalously large feature on the rift zone, is now being reduced by collapse to a size comparable to other rift features.

The June M 6.1 earthquake provided new insights into Kilauea south flank movements. The earthquake did not affect the ongoing eruption. Deformation studies show a pattern of rift subsidence and south flank uplift similar to pre-earthquake strain patterns, indicating that a larger amount of strain is still waiting to be released. Therefore, we can expect a larger south flank earthquake in the future, one that could end the eruption and relieve strain through subsidence of the south coast, as happened in November 1975. The seismicity of the Puna area remains somewhat elevated, possibly increasing the chances of eruption east of the present site, a circumstance that potentially affects both residential development since 1960 and the two geothermal projects getting underway.

### *Staff changes*

In 1989, we saw the departure of Carl Johnson (staff seismologist) for the University of Hawaii at Hilo (UHH), Lynn Simmons (temporary appointment with geology program) for graduate work at Johns Hopkins, and the retirement of Bob Koyanagi (staff seismologist) and George Kojima (head electronics technician). Bob and George are persons directly trained by Jerry Eaton and represented our link to the beginning of the "modern" Observatory. Fortunately, Bob is continuing on in scientist emeritus status, and both Bob and George are being considered for contractual work with the State-funded Center for the Study of Active Volcanoes (CSAV) at UHH. CSAV will provide training in volcano monitoring for persons from underdeveloped countries whose people live close to hazardous volcanoes. The program is jointly sponsored by UHH, University of Hawaii at Manoa, and HVO.

Arriving in 1989 was Paul Okubo, an able replacement for Bob Koyanagi. Replacements for Carl, Lynn, and George had not been selected by the end of the year.

Table C-1.

## ERUPTION STATISTICS 1989

### Areas

Total area covered by lava, January 1983 through October 1989.....	67 sq km
Surface area* covered by Puu Oo flows (episodes 1-47) plus the "A vent" flow of episode 48.....	36 sq km
Surface area covered by Kupaianaha flows through October 1989.....	31 sq km
*Puu Oo flows originally covered about 42 sq km, but some of this area has been re-buried by Kupaianaha flows.	
New land created December 1986 through October 1989. (This is a net figure, which does not include new land that was claimed by wave erosion or collapse of the active lava bench). ....	144 acres

### Volumes

Total, January 1983 through December 1989 .....	approx 1,200 million cubic meters
Episodes 1-47 .....	560 million cubic meters
Episodes 48 (July 1986 through December 1989).....	approx 640 million cubic meters

### Other fascinating facts

Kupaianaha pond diameter .....	approx 120 m
Pond level .....	20-32 m below the rim
Height of Kupaianaha lava shield.....	about 60 m
Height of Puu Oo cone, October 1988.....	253 m
Diameter of Puu Oo Crater.....	200 m
Depth of Puu Oo Crater .....	about 180 m
Puu Oo pond status.....	intermittently active
Thickness of Kupaianaha lava at the coast	
roughly 25 m over Highway 130 at Queens Bath	
roughly 15 m near the sea cliff at mid-flow	

### Structures destroyed

Residences destroyed through December 1989 .....	74
Other structures include the Wahaula Visitor Center and maintenance shop, and the Royal Gardens community center.	
Puu Oo, Episodes 1-47--Royal Gardens .....	16
Kupaianaha, November 1986 through December 1988	
--Kapaahu, Kalapana, Royal Gardens .....	48
May through September 1989--Royal Gardens, Wahaula.....	10

# KILAUEA EAST RIFT ERUPTION AREA

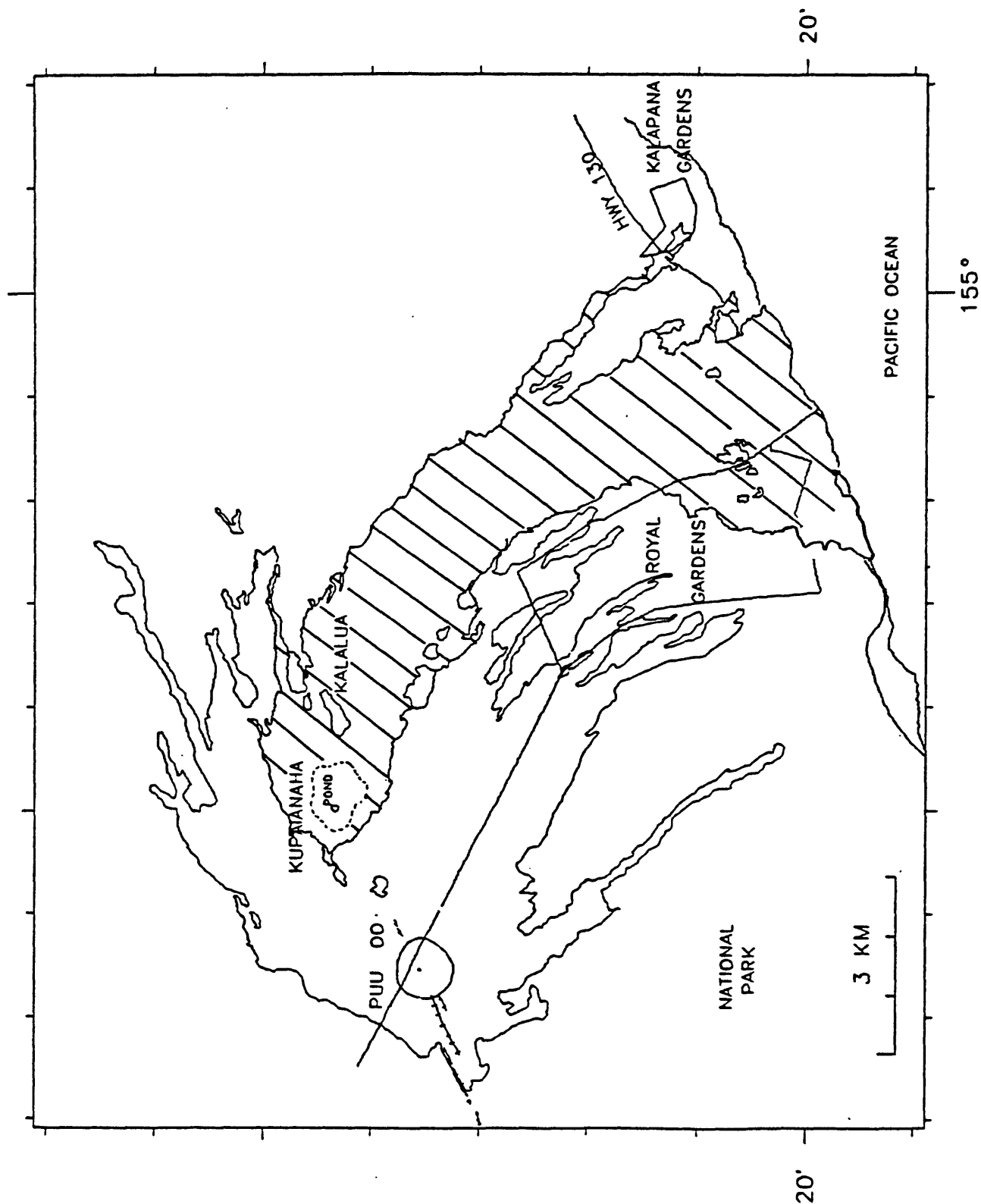


Figure C-1. Map showing area covered by lava from Kilauea's east rift eruption. Blank areas extending outward from Pu'u O'o are covered by lava erupted from January 1983 through July 1986. Hachured areas are covered by lava erupted from Kupaianaha, July 1986 to the end of 1989.



# KILAUEA

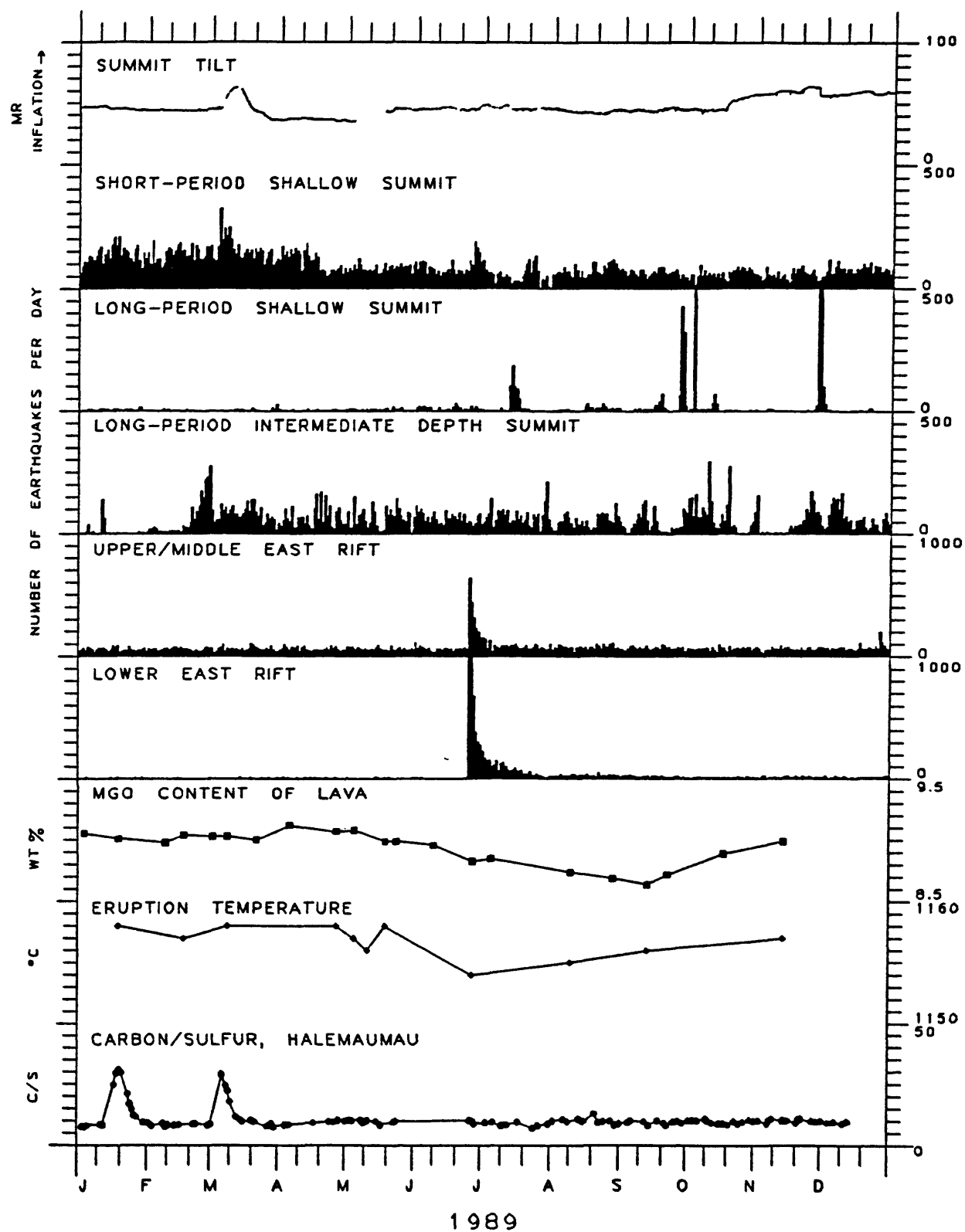


Figure C-2a. Selected seismic, geodetic, petrologic and geochemical data for Kilauea, 1989.

# MAUNA LOA

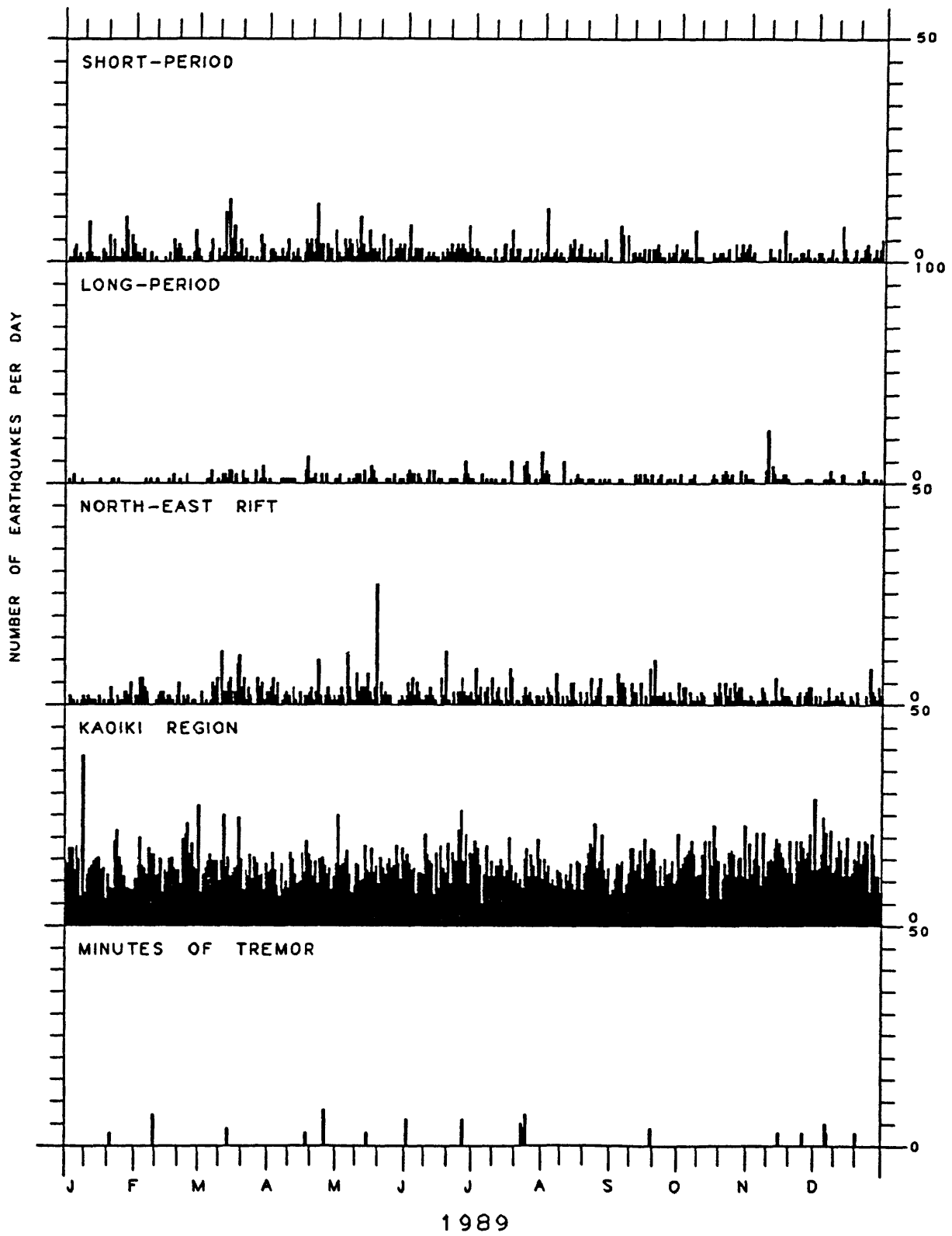


Figure C-2b. Selected seismic data for Mauna Loa, 1989.

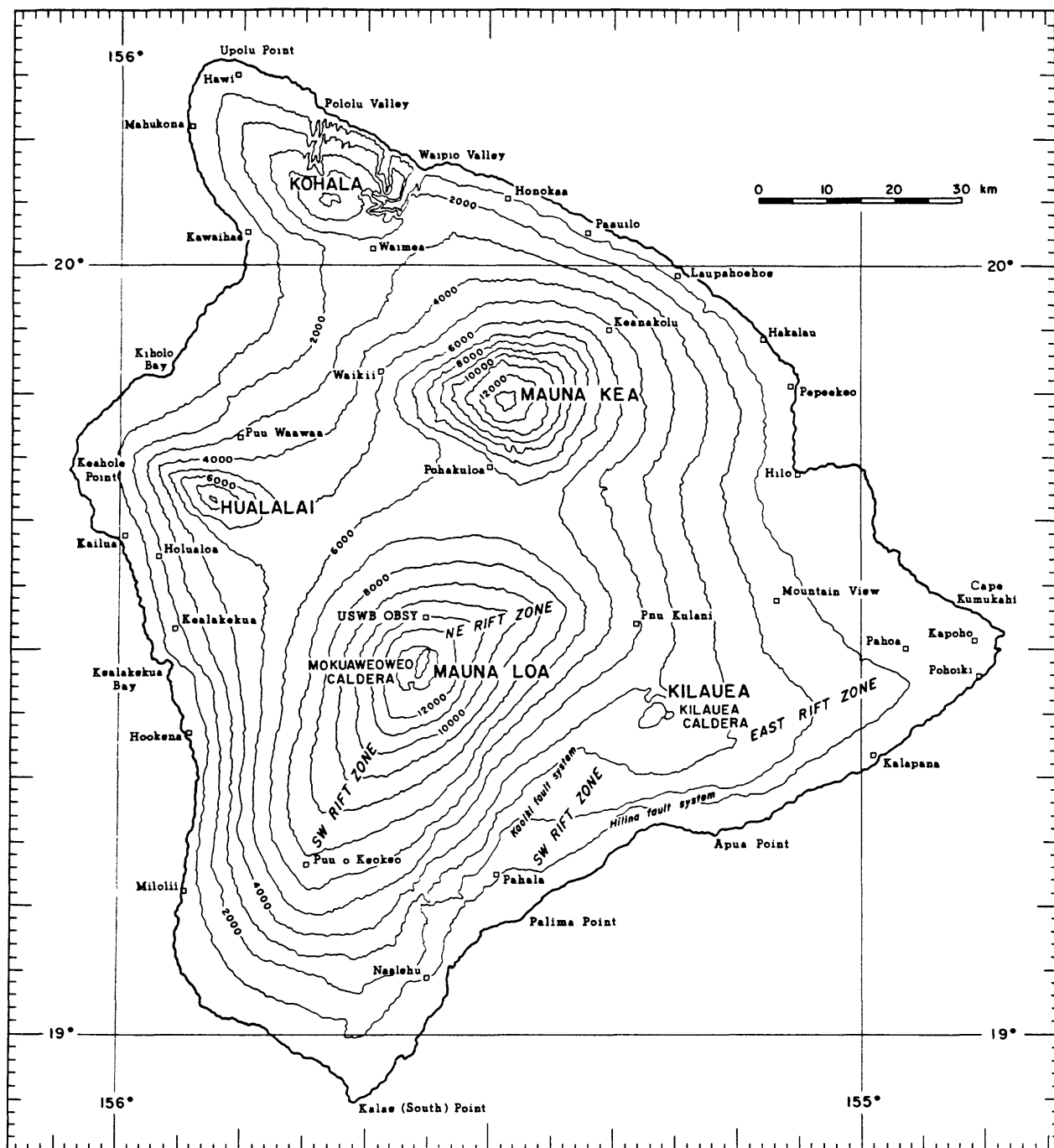


Figure 1. Map of the Island of Hawaii, showing principal settlements and selected geographic and geologic features.

## SEISMIC INSTRUMENTATION

The network. The Hawaiian Volcano Observatory maintains an extensive telemetered seismic network on the Island of Hawaii. In 1989 the network consisted of 52 stations; two are low-gain multicomponent stations (optical), 12 are three-component, and 38 are vertical components only. The coverage is most dense on and around Kilauea Volcano. With the exception of self-contained systems at the Uwekahuna and Hilo stations, all seismic signals from the short-period network are telemetered to the Observatory for recording.

Figure 1 is a map of selected geographic and geologic features, Figure 2 shows the seismic stations which were operated on the island of Hawaii during 1989, and Figure 3 indicates the telemetry scheme for the respective seismic stations. Table 1 lists all seismic stations operated by the U.S. Geological Survey field office in Hawaii during 1989. Listed are names, three- and four-letter codes, coordinates in degrees and minutes, elevation in meters, and other data, as described below, pertaining to each station. In addition to seismometers listed in Table 1, a long-period, three-component set of Press-Ewing seismometers were operated in the Uwekahuna vault and recorded on photographic paper.

Instrumentation and recording. Each telemetered station has a voltage-controlled oscillator (VCO) for FM multiplex transmission to HVO via either hardwire or radio. These telemetering stations are all of Type 1, the Office of Earthquakes, Volcanoes and Engineering standard system used in USGS seismic networks (see Table 2 for details). After discrimination at the receiver, the analog signals are converted to digital form as part of the routine computer location processing and archiving. Analog signals from 36 selected stations are recorded on two Develocorders using 16-mm microfilm. FM signals from the telemetering network are also recorded directly on one-inch magnetic tape. Selected larger events are copied onto condensed FM library tapes, which are currently archived in Menlo Park. The type(s) of continuous recording used for each station (in addition to magnetic tape for the telemetered stations) is coded in Table 1 as follows: D - Develocorder film, I - ink paper, P - photographic paper, H - Helicorder paper.

In addition to the standard stations, optical drum seismographs are maintained at Uwekahuna (HVO), Hilo, and Maui, and a helicorder drum seismograph is maintained on Oahu (Honolulu station operated by the Pacific Tsunami Warning Center). The less sensitive optical records are used primarily for amplitude measurements for magnitude calculations to supplement readings from the high-gain stations. The paper records, as well as the 16-mm Develocorder microfilms, are archived at HVO.

Seismograph response and calibration. Displacement response curves for the three short-period seismograph types in use are given in Figure 4. Types 2 and 3 are electro-mechanical systems recorded on paper records. The Type 1 curve gives the displacement magnification of the standard OEVE system from ground motion at the seismometer to the seismic trace, as seen on a 20x Develocorder film viewer. The curves plot the unit response, which is multiplied by a constant but known factor (CAL-factors range from about 1 to 7, averaging about 4, table 1) to get the response for an individual station. Individual CAL factors for Type 1 seismographs are equal to the peak-to-peak amplitude measured in millimeters on the 20x Develocorder viewer of a 100-microvolt 5 to 8-Hz signal introduced to the preamp/VCO in place of the geophone at the field station. Calibration is normally done each time a station is visited for other maintenance requirements.

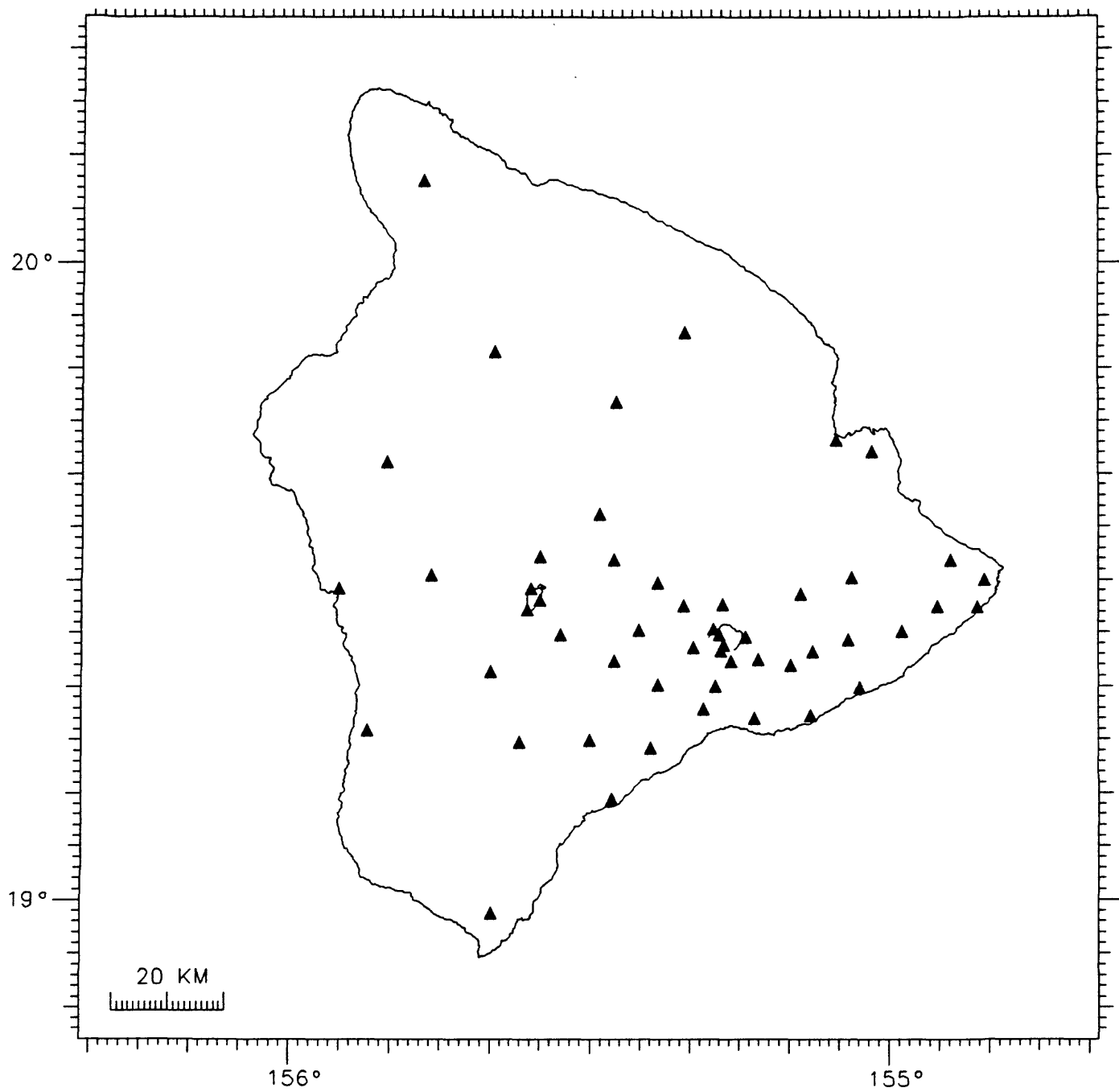


Figure 2. Map of the Island of Hawaii, showing seismic stations operational during 1989.

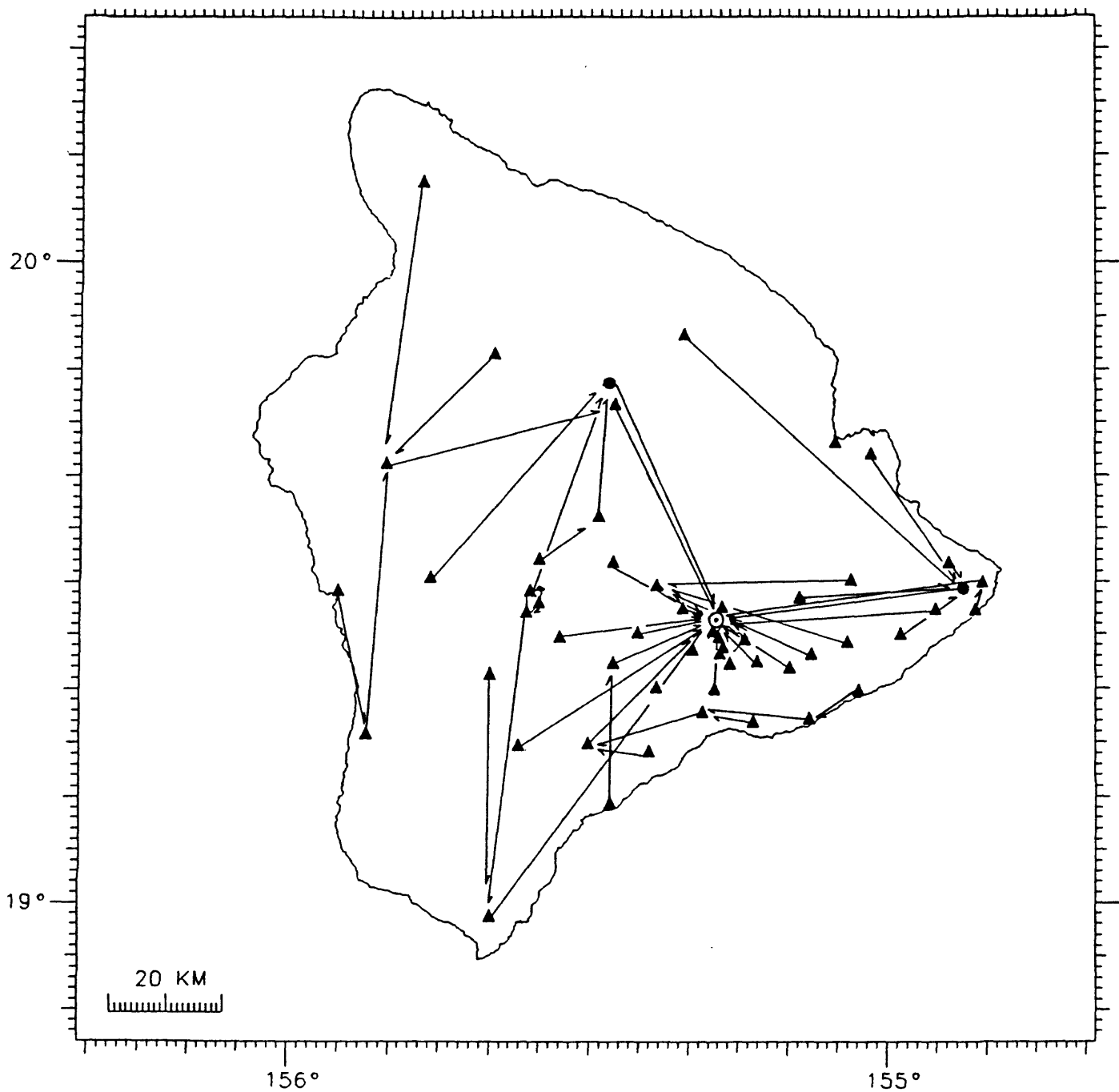


Figure 3. Map of the Island of Hawaii, showing the telemetry scheme for the 1989 Hawaiian Volcano Observatory seismic network.

Legend

- ▲ Seismometer location
- Repeater station

Table 1. Seismic stations in Hawaii operated by the USGS in 1989.

STATION NAME	CODE	--LAT---		---LON---		ELEV (M)	DELAY 1	DELAY 2	CAL	SEIS TYPE	OPTIC RECORD
		D	M	D	M						
AHUA	AHUV	19	22.40	155	15.90	1070	-0.10	-0.13	2.1	E5	DI
AHUA	AHUE	19	22.40	155	15.90	1070	-0.10	-0.13	3.0	MW	
AHUA	AHUN	19	22.40	155	15.90	1070	-0.10	-0.13	3.0	MW	
AINAPO	AINV	19	22.50	155	27.62	1524	0.13	0.17	5.5	L5	D
AINAPO	AINE	19	22.50	155	27.62	1524	0.13	0.17	3.0	MW	
AINAPO	AINN	19	22.50	155	27.62	1524	0.13	0.17	3.0	MW	
CAPTAIN COOK	CACV	19	29.29	155	55.09	323	0.00	-0.16	1.1	L5	D
CONE PEAK	CPKV	19	23.70	155	19.70	1038	-0.26	-0.07	6.0	E4	
DANDELION	DANV	19	21.42	155	40.04	3003	-0.27	0.03	7.0	E4	D
DESERT	DESV	19	20.20	155	23.30	815	-0.29	-0.13	3.0	L5	DI
ESCAPE ROAD	ESRV	19	24.68	155	14.33	1177	-0.17	-0.19	2.2	L5	D
FERN FOREST	FEFV	19	28.70	155	8.91	691	0.01	0.05	0.0	L5	
HAWAIIAN BEACHES	HABV	19	31.89	154	53.89	92	-0.09	-0.24	1.0	L4	
HALEAKALA, MAUI	HAE	20	46.00	156	15.00	2090	0.00	0.00	1.0	W	P
HALEAKALA, MAUI	HAL	20	46.00	156	15.00	2090	0.00	0.00	1.0	H1	P
HALEAKALA, MAUI	HAN	20	46.00	156	15.00	2090	0.00	0.00	1.0	W	P
HILO	HIE	19	43.20	155	5.30	20	0.54	0.30	1.0	W	P
HILO	HIL	19	43.20	155	5.30	20	0.54	0.30	1.0	H1	P
HILO	HIN	19	43.20	155	5.30	20	0.54	0.30	1.0	W	P
HILINA PALI	HLPV	19	17.96	155	18.63	707	0.02	0.07	2.6	L5	D
HONOLULU, OAHU	HON	21	19.30	158	0.50	2	0.00	0.00	0.0	H1	H
HALE POHAKU	HPUV	19	46.85	155	27.50	3396	0.31	0.17	3.3	L4	D
HUMUULA SHEEP	STHSSV	19	36.31	155	29.13	2445	0.20	0.35	5.3	L5	D
HUMUULA SHEEP	STHSSE	19	36.31	155	29.13	2445	0.20	0.35	3.0	MW	
HUMUULA SHEEP	STHSSN	19	36.31	155	29.13	2445	0.20	0.35	3.0	MW	
HOT CAVES	HTCV	19	14.33	155	24.02	381	-0.16	-0.07	0.0	E4	
HUALALAI	HUAV	19	41.25	155	50.32	2189	0.67	0.38	3.0	L4	DI
HEIHEIAHULU	HULV	19	25.13	154	58.72	369	-0.17	-0.16	1.6	L5	DI
HEIHEIAHULU	HULE	19	25.13	154	58.72	369	-0.17	-0.16	3.0	MW	
HEIHEIAHULU	HULN	19	25.13	154	58.72	369	-0.17	-0.16	3.0	MW	
KAAPUNA	KAHV	19	15.98	155	52.28	524	-0.12	-0.01	3.5	E4	D
KAENA POINT	KAHV	19	17.35	155	7.95	37	-0.01	0.06	1.4	L4	D
KAOIKI FAULTS	KFAV	19	25.25	155	25.18	1579	0.13	0.17	0.0	E5	
KAHUKU	KHUV	19	14.90	155	37.10	1939	0.03	-0.03	2.7	E4	D
KANEKII	KIIV	19	30.56	155	45.90	1841	0.15	0.37	2.9	L5	D
KANEKII	KIIE	19	30.56	155	45.90	1841	0.15	0.37	3.0	MW	
KANEKII	KIIN	19	30.56	155	45.90	1841	0.15	0.37	3.0	MW	
KEANAKOLU	KKUV	19	53.39	155	20.58	1863	0.68	0.24	3.3	L5	D
KALALUA CONE	KLCV	19	24.35	155	4.08	659	-0.25	-0.30	0.0	L4	DH
PUU KALIU	KLUV	19	27.48	154	55.26	271	-0.17	-0.30	2.9	L5	D
KOHALA	KOHV	20	7.69	155	46.77	1166	-0.03	-0.17	1.5	L5	D
KOHALA	KOHE	20	7.69	155	46.77	1166	-0.03	-0.17	3.0	MW	
KOHALA	KOHN	20	7.69	155	46.77	1166	-0.03	-0.17	3.0	MW	
KIPUKA NENE	KPNV	19	20.10	155	17.40	924	-0.11	-0.08	3.5	L5	D
KAPOHO	KPOV	19	30.02	154	50.51	134	-0.09	-0.24	2.5	L5	D
MAUNA LOA	MLOV	19	29.80	155	23.30	2010	0.03	0.08	5.8	L5	DI
MAUNA LOA	MLOE	19	29.80	155	23.30	2010	0.03	0.08	3.0	MW	D
MAUNA LOA	MLON	19	29.80	155	23.30	2010	0.03	0.08	3.0	MW	
MAUNA LOA X	MLXV	19	27.60	155	20.70	1475	0.06	0.15	3.0	L5	
MOKUAWEOWEO	MOKV	19	29.28	155	35.98	4104	0.15	0.16	5.5	L4	DI
MAKAOPUHI	MPRV	19	22.07	155	9.85	881	-0.17	-0.20	4.2	L5	DI
MOUNTAIN VIEW	MTVV	19	30.25	155	3.75	409	-0.02	0.01	5.0	E5	D
NATIONAL GUARD	NAGV	19	42.12	155	1.72	18	0.54	0.30	3.2	E5	D
NORTH PIT	NPTV	19	24.90	155	17.00	1115	-0.30	-0.18	3.0	E4	DI
NORTH PIT	NPTE	19	24.90	155	17.00	1115	-0.30	-0.18	3.0	MW	
NORTH PIT	NPTN	19	24.90	155	17.00	1115	-0.30	-0.18	3.0	MW	
OUTLET	OTLV	19	23.38	155	16.94	1038	-0.19	-0.18	4.9	L4	
PAUHI	PAUV	19	22.62	155	13.10	994	-0.21	-0.24	2.4	L4	D
PAUHI	PAUE	19	22.62	155	13.10	994	-0.21	-0.24	3.0	MW	
PAUHI	PAUN	19	22.62	155	13.10	994	-0.21	-0.24	3.0	MW	
PUU ULAULA	PLAV	19	32.00	155	27.67	2992	-0.03	0.13	5.4	L5	DI
POHOIKI	POIV	19	27.42	154	51.22	16	-0.09	-0.24	0.0	L5	
POLIOKEAWA PALI	POLV	19	17.02	155	13.47	169	-0.02	0.03	2.8	E4	D
PUU PILI	PPLV	19	9.50	155	27.87	35	-0.15	-0.15	1.7	E4	D
RIM	RIMV	19	23.90	155	16.60	1128	-0.21	-0.13	0.0	L5	
RAINSLED	RSDV	19	27.78	155	16.68	1270	0.06	0.15	0.0	L5	

**Table 1. (continued)**

SOUTHPOINT	SPTV	18	58.91	155	39.92	244	-0.17	-0.22	2.8	L5	D
SOUTH POINT	SPTN	18	58.91	155	39.92	244	-0.17	-0.22	3.0	MW	
SOUTH POINT	SPTN	18	58.91	155	39.92	244	-0.17	-0.22	3.0	MW	
STEAM CRACKS	STCV	19	23.30	155	7.67	765	-0.25	-0.30	2.4	L5	DH
STEAM CRACKS	STCE	19	23.30	155	7.67	765	-0.25	-0.30	3.0	MW	
STEAM CRACKS	STCN	19	23.30	155	7.67	765	-0.25	-0.30	3.0	MW	
SOUTHWEST RIFT	SWRV	19	27.26	155	36.30	4048	0.01	0.04	5.6	E4	D
TRAIL	TRAV	19	24.91	155	32.96	3207	0.00	0.00	0.0	L4	
UWEKAHUNA	UEE	19	25.40	155	17.60	1240	-0.21	0.00	2.5	E	P
UWEKAHUNA	UEN	19	25.40	155	17.60	1240	-0.21	0.00	2.5	E	P
UWEKAHUNA	UEZ	19	25.40	155	17.60	1240	-0.21	0.00	2.5	E	P
UWEKAHUNA	URAV	19	25.40	155	17.60	1240	-0.21	0.00	0.0	RA	
UWEKAHUNA	URAE	19	25.40	155	17.60	1240	-0.21	0.00	0.0	RA	
UWEKAHUNA	URAN	19	25.40	155	17.60	1240	-0.21	0.00	0.0	RA	
WAIKII	WAIV	19	51.58	155	39.60	1433	0.20	0.35	0.0	L5	
WAHAULA	WHAV	19	19.90	155	2.92	29	-0.10	-0.04	1.5	E4	D
WILKES CAMP	WILV	19	28.15	155	35.02	4037	0.22	0.17	2.6	E5	D
WILKES CAMP	WILE	19	28.15	155	35.02	4037	0.22	0.17	3.0	MW	
WILKES CAMP	WILN	19	28.15	155	35.02	4037	0.22	0.17	3.0	MW	
WEATHER OBSERVAT	WOBV	19	32.31	155	35.01	3396	0.00	0.00	0.0	E4	
WOOD VALLEY	WOOV	19	15.08	155	30.12	909	-0.15	-0.06	4.6	E5	

**Table 2. Seismic Instrument Types**

The codes in parentheses refer to the seismometer types listed in Table 1.

Type 1 (Codes E, L, or R and 4, 5, or A) consists of:

- a) Geophone - Electrotech EV-17 (E), Mark Products L4C (L) or Kinometrics Ranger SS-1 (R) 1.0-sec. period moving-magnet vertical- or horizontal- (E-W and N-S) component seismometer adjusted for an output of 0.5 volts/cm/sec and 0.8, critically damped.
- b) Preamp/VCO - USGS/OEVE Model J402 (4), J502 (5) or Kinometrics Model AOM-1 (A) voltage-controlled oscillator. Three db points for bandpass filter at 0.1 Hz and 30 Hz. Signals are transmitted on audio FM carrier over cable or FM radio link to HVO.

Type 2 (Code E) consists of:

- a) Electrotech EV-17 1.0-sec. period moving-magnet vertical- or horizontal- (E-W and N-S) component seismometer.
- b) 3.5 Hz galvanometer with appropriate shunt resistances for critical damping. System is poorly calibrated.

Type 3 (Code H1) consists of:

Electrotech EV-17 or Observatory-built 0.8-sec. period moving-coil seismometer, with HVO-built solid-state seismic preamplifier, galvanometer driver, and 2 Hz galvanometer. Peak magnification approximately 40,000 at 4 Hz.

Code (W) is a Wood-Anderson torsion seismograph.

Code (MW) is a horizontal-component seismograph based on a Type 1 system and modified to a Wood-Anderson response.



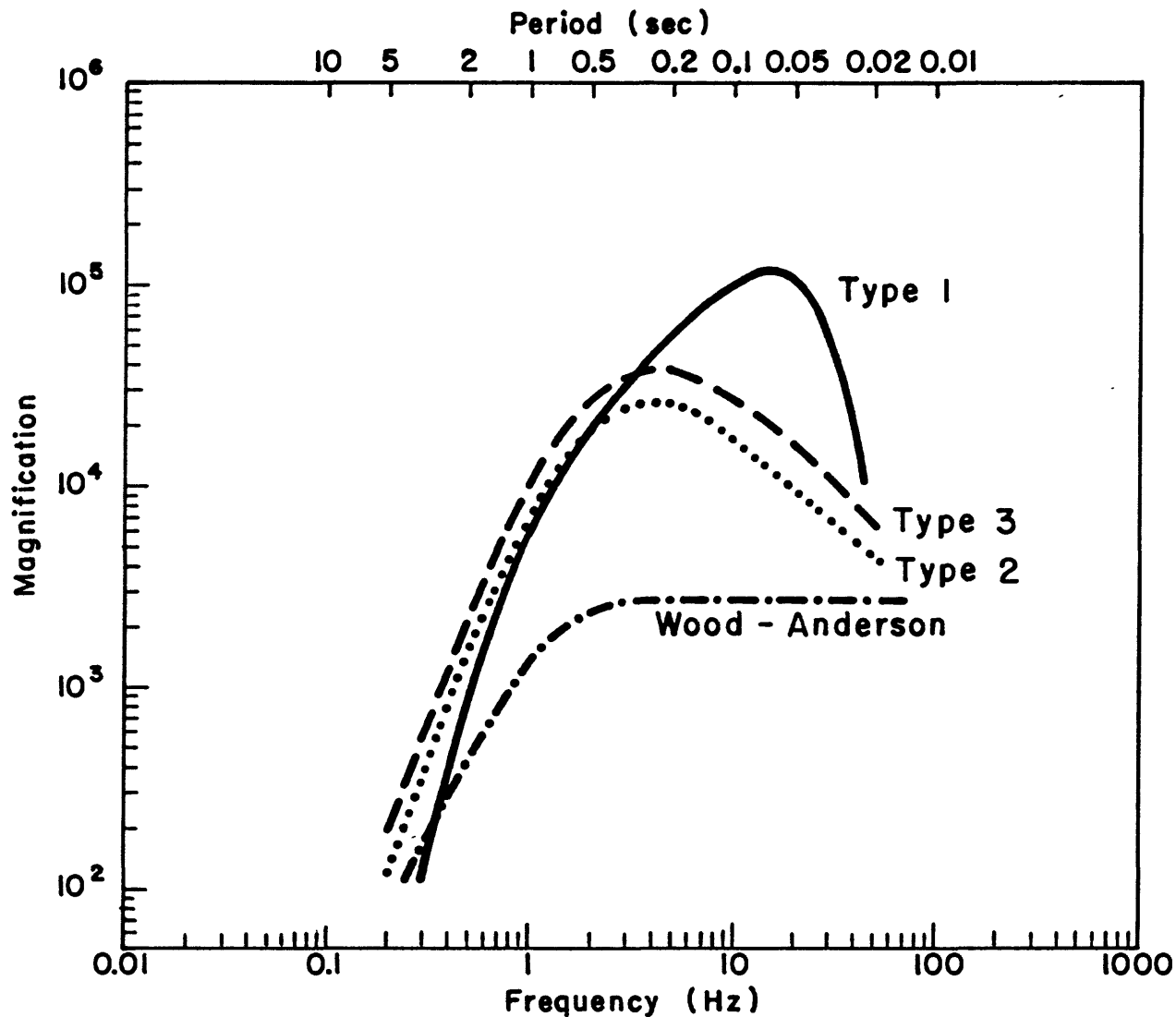


Figure 4. System response curves for the Wood-Anderson torsion seismograph and for the three different types of seismometers in use by the Hawaiian Volcano Observatory. Types 2 and 3 are electro-magnetic seismographs recorded optically on photographic paper. Type 1 is the standard OEVE seismometer system recorded on Develocorder film and magnetic tape. The curve for Type 1 includes response of the geophone, all electronics including telemetry, Develocorder galvanometer, and projection of film by a 20x viewer. The curves plot the unit response, which should be multiplied by a constant but known factor (CAL) to get the response for an individual station.

## SEISMIC DATA PROCESSING

Develocorder films are scanned on a daily basis for frequency of earthquakes, and coda durations are measured for magnitude determination. In 1986, HVO acquired a VAX 11-750 computer and adopted the CUSP (Cal Tech USGS Seismic Processing) routine. Discriminated analog signals are converted to digital form, and detected events are saved in real time. Detected events are demultiplexed, and P-picks are made by the computer, producing a rough location and coda-amplitude (CD) magnitude. Events are examined by an analyst to refine computer P-picks and to time additional P- and S-phases for a preliminary location and final CD magnitude. Binary CUSP files are tape-archived and translated into ASCII phase files. Locations are then made, using the program HYPOINVERSE (Klein, 1989)<sup>2</sup>. Events are reworked and rerun, as needed, to produce a final solution. Magnetic tape copies of all arrival times and output summary data are kept at Menlo Park and at HVO.

The crustal model used is specified by velocities at four depth points. Velocity at any depth is given by linear interpolation between points and uses a homogeneous half-space, as listed below:

VELOCITY (km/sec)	DEPTH (km)
1.9	0.0
6.5	4.6
6.9	15.0
8.3	16.5

Two empirical sets of station delays or corrections were used in the locations and are given in Table 1. The delay models are separated by a circle of radius 34 km, centered at 19°22' N and 155°10' W. Delay model 1 was used for events on Kilauea and its south flank, and delay model 2 applies to the rest of the island and offshore earthquakes. A combination of the two delay models was used for epicenters that fall in a transition zone. (For a detailed description, refer to Klein, 1989.)<sup>2</sup>

Magnitudes for most events were computed using both recorded amplitudes on low gain or Wood-Anderson stations and signal or coda duration on selected short-period vertical stations. Amplitudes read from other than Wood-Anderson instruments are corrected to an equivalent Wood-Anderson amplitude using the curves of Figure 4 and CAL factors listed in Table 1. Amplitude magnitudes larger than 2.5 are generally based on the Wood-Anderson instruments in Hilo or on Type 2 seismographs at Uwekahuna.

Duration magnitudes are determined from the length of signal in seconds read from the Develocorder viewer. This length of time, also called the "F-P time," is measured from the P arrival to the point where the earthquake signal has decayed nearly to the noise level. A bilinear relation is an appropriate fit to the data sample and is used to compute all duration magnitudes. Duration times are read only from Type 1 seismographs. Because duration magnitudes are relatively insensitive to station response and can be determined using the high-gain, short-period stations, it is felt that duration magnitudes are more accurate and complete at the lower magnitudes (below 2). The equations used in magnitude determination are as follows:

$$\text{duration} < 210 \text{ sec} \quad M = -5.2 + 3.89 \log (F-P) + .013 Z - + .0037 D$$

$$\text{duration} > 210 \text{ sec} \quad M = -.905 + 2.026 \log (F-P) + .013 Z - + .0037 D$$

where Z and D are the depth and epicentral distance in km, respectively.

A coda-amplitude (CD) magnitude determined by CUSP has been also included. The CD magnitudes were computed using maximum amplitudes and coda decay rates from digitized signals.

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<sup>2</sup> Klein, F.W., 1989, User's guide to HYPOINVERSE: U.S. Geological Survey Open-File Report 89-314, 58 p.

## SEISMIC SUMMARY

The emphasis in both station coverage and detailed data analysis is on the highly active south half of the Island of Hawaii. Hundreds of earthquakes too small to locate are classified as type<sup>3</sup> and counted daily. The set of well-recorded earthquakes located in the Hawaii Island region is nearly complete above magnitude 2.0. Many smaller events are located in the densely instrumented Kilauea area. Substantial effort is made to locate earthquakes elsewhere within the Hawaiian Archipelago. Such coverage cannot be as complete as in south Hawaii, but nearly all events above magnitude 4.0 are located with limited precision. Data presented in the seismic summary is in four parts: (1) Table 3 gives duration of harmonic tremor and numbers of earthquakes (most too small to locate) from several source regions around Kilauea and Mauna Loa. The source region is determined visually from signal character and pattern of arrival times at key stations. (2) Maps showing computer located hypocenters are given in Figures 9-22. The location maps are of different scales and provide hypocenters with magnitude thresholds set at 1.0, 2.0, 3.0, and 3.5, varied according to region. (3) The list of computer locations constitutes the bulk of this summary and is given in Table 5. Each earthquake in the list is assigned a three-letter code based on its general location and depth. Figures 5-8 are maps of the regions used to assign the location codes. The latitude and longitude limits of rectangular regions are listed in Table 4. When the listed coordinates imply an overlap, precedence is given according to Figures 5-8. (4) Table 6 re-lists the events in Table 5 for which either duration or amplitude magnitude is 3.0 or larger. This list includes many of the earthquakes felt in Hawaii.

Table 3. Number of earthquakes and minutes of tremor recorded on seismographs around Kilauea and Mauna Loa.

Earthquake categories are as follows:

- 1) Kilauea summit, short-period caldera: shallow earthquakes beneath the caldera.
- 2) Kilauea summit, long-period caldera A: earthquakes characterized by low frequency signatures of 3 to 5 Hz, often originating 0-5 km beneath the summit.
- 3) Kilauea summit, long-period caldera B: earthquakes characterized by low frequency signatures of 1 to 3 Hz, often originating 0-5 km beneath the summit.
- 4) Kilauea summit, long-period caldera C: earthquakes characterized by low frequency signatures of 1 to 5 Hz, often originating 5-15 km beneath the summit.
- 5) Kilauea summit 30 km: deep earthquakes about 30 km beneath the summit region.
- 6) Kaoiki and southwest rift: earthquakes beneath the southwest rift of Kilauea, western parts of the Koa'e faults, and adjacent Kaoiki fault system.
- 7) Upper east rift: earthquakes in the upper and middle east rift zones, the adjacent parts of the south flank, and eastern parts of the Koa'e faults.
- 8) Lower east rift: earthquakes in the lower east rift zone and adjacent parts of the south flank.
- 9) Mauna Loa short-period: shallow earthquakes in the Mauna Loa summit region.
- 10) Mauna Loa long-period: earthquakes characterized by the low-frequency signatures near the summit region.
- 11) Mauna Loa northeast rift: earthquakes beneath the northeast rift zone of Mauna Loa.
- 12-15) Tremor is separated into four categories: shallow, intermediate, and deep Kilauea, and Mauna Loa. Depth is inferred on the basis of relative amplitudes on seismographs.

The criteria for Kilauea shallow tremor have been changed to accommodate the ongoing eruption where tremor in the middle east rift zone was continuous. Distinction was made between high-amplitude tremor related to strong eruptive periods and low-amplitude tremor during periods with no lava production. Only minutes of tremor at saturated levels recorded locally at STC and KLC are included in Table 3.

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<sup>3</sup> Koyanagi, R. Y., 1982, Procedure for routine analyses and classification of seismic events at the Hawaiian Volcano Observatory, Part I: U. S. Geological Survey Open-File Report 82-625, 32 p.; figs., 59 p. [unpaginated].

Table 3.		KILAUEA SUMMIT			KILAUEA FLANK			MAUNA LOA			TREMOR (MINUTES)		
DATE	SHORT PER.	LONG PERIOD	30	KAO. UP. LOW.	SHORT LONG NE	KILAUEA MAUNA			TREMOR (MINUTES)				
1989	CALD.	A B C	KM	& SW EAST EAST	PER. PER. RIFT	SHAL.	INT.	DEEP	SHAL.	INT.	DEEP		
JAN 1	66		1	29	45	4					7		
2	88	3	1	28	53	2	1	1	4				
3	110	1	3	35	67	3	1				2		
4	106	3	7	35	42	9	3	2	1				
5	131	5	36	25	72	7	4				22		
6	128	5	4	36	66	5	1		1				
7	116	2	7	30	52	2	2				41		
8	130	3		13	31	2	1	1	1		9		
9	155	4		77	53				2		5		
10	167	7	2	15	66	5	2		1	2			
11	99	7	141	23	63	3	9		2	20	27		
12	137	5	61	26	65	3	2		1				
13	156	5	1	27	57	2	1		1				
14	120	3	2	29	37	8	1		1		2		
15	177	4	3	30	54	9	1						
16	206	7	2	31	85	8		1	2				
17	172	6	3	25	71	3	3						
18	209	4	1	26	85	9	2		1		8		
19*	131	2		12	26	1	1						
20	162		1	23	44	1	6		1				
21	154	6	1	17	49	3	1	1	4				
22	144	6	1	17	49	6	5	1	1				
23	120	6		38	81	7	1						
24	108	1	1	43	53	7	1	1	2				
25	160			31	48	2	3		1				
26	174	2	1	27	45	9	2		1				
27	115	9	4	22	57	2	10		3				
28	84	14	2	17	52	1	7		3				
29	144	2	5	17	62	15	1		2				
30	120	4	4	16	70	4	6		5				
31	146		7	16	42	2	4						
FEB 1	100	2	17	21	60	2	2		2				
2	192	1	21	27	52	6	2		2				
3	101	2	28	40	62	6	1		6				
4	118		22	27	60	3	3		6				
5	120	1	10	26	45	2		1	4				
6	82	1	7	23	47	5			3		99		
7	102	9	5	35	53	6	2	1					
8	149	1	7	32	63	1							
9	166	4	1	32	64	7	1				7		
10	157		11	22	51			1	1		5		
11	132	2	11	23	63	1			2				
12	151	2	11	30	76	3			3				
13	176	3	11	15	71	5	1		3		8		
14	187	1	12	25	60	9			1		59		
15	154		6	24	73	4	2	1	2		4		
16	155	2	33	30	62	4			2				
17	130	6	29	31	60	5	5	2	1				
18	133	1	23	26	60	8	3						
19	184	2	46	25	53	8	4		2				
20	115	4	108	25	44	2	3	1	5				
21	173		60	19	43	1	1						
22	159		90	39	56	6			2				
23	121		113	41	38	5	1	2	1				
24	121		175	46	42	5	1		2				

KILAUEA SUMMIT				KILAUEA FLANK			MAUNA LOA			TREMOR (MINUTES)		
DATE	SHORT PER.	LONG CALDERA	PERIOD	30 KM	KAO. & SW RIFT	UP. EAST RIFT	LOW. EAST RIFT	SHORT PER.	LONG PER.	NE RIFT	KILAUEA SHAL.	MAUNA LOA INT. DEEP
1989	CALD.	A B C										
FEB25	130		146		32	52	2					
26	172	1	220		37	71	7	2		1		
27	165	4	230		26	73	1	7		1		34
28	174	2	274		25	68	11	3			2	
MAR 1	122		97		54	69	4	1				
2	111		47		15	27	1			3		
3	167		59	1	23	39	2					
4	324		57	1	26	63	4		1	1		
5	194	3	121		29	75	7	2	1			
6	247		91		32	97	3	5	3	1	17	
7	212		109		29	43	3			5		
8	249	2	79		29	66	7			4		4
9	199	1	97		29	57	4	3	1	6		
10	159	1	113		20	69	5	1			4	65
11	139	5	80		29	54	2	2	2	12		
12	179	5	81		50	61	4	11	2	3		
13	128	3	65		26	50	5	1	1	3		
14	121	6	72		31	46	14	14	3	5		6
15	143	2	83		22	67	4	5	3	6		4
16	160		100	1	24	44	6	8		3		6
17	143		135		26	53	6	2	2	3		14
18	155	1	91		27	64	5	2		9		
19	120	12	141		49	108	10	5		11		
20	162	5	139		30	88	7	1	3	4		
21	146	2	86		16	72	6	3	1	6		3
22	164	2	71		25	63	6		1	1		
23	154		105		22	55	8	1		4		7
24	96		35		32	52	9	1		2		
25	120		43		21	53	2					
26	144		80		31	65	7	1	3			8
27	157		59		28	52	11			6		
28	94	16	68		22	85	4	6	1	4		
29	109	1	58	1	23	58	6	4	4	5		
30	121	27	16	1	16	35	7		1	1		31
31	115	6	43		28	40	10			3		
APR 1	172	1	31		24	58	1	3	1	3		
2	133	2	54	1	25	69	9	3		4		41
3	150	4	102		33	98	13	2		6		5
4	128	4	61		25	71	2	1		2		
5	157	1	48		18	56	10	1		5		
6	140	5	112		13	73	4	3	1			45
7	166		25	1	28	75	4	1	1	1		
8	154		27	2	16	66	6	2	1	2		
9	138	4	66	1	20	84	9	5	1	3		
10*	69	1	67		17	38	8		1	2		
11	153	2	65		33	71	6	2	1			
12	183		39		30	84	11	1	1	4		49
13	131	7	74		23	58	9	3		1		29
14	112		32		19	48	6	1				
15	115	1	19		20	38	9			3		
16	143	2	102		33	55	4	2				5
17	126	5	161		24	53	11	5	3	2		
18	71	2	60	1	38	51	7	4	6	2		3
19	73		169	8	32	49	4	5	1	3		
20	68	2	47		29	49	5	2	1	4		

KILAUEA SUMMIT				KILAUEA FLANK			MAUNA LOA			TREMOR (MINUTES)		
DATE	SHORT PER.	LONG CALDERA	PERIOD	30 KM	KAO. & SW RIFT	UP. EAST RIFT	LOW. EAST RIFT	SHORT PER.	LONG PER.	NE RIFT	KILAUEA SHAL.	MAUNA LOA INT. DEEP
1989	CALD.	A B C										
APR 21	50	2	156	1	22	62	8	5	2	1		
22	56	2	72		29	73	10	13		3		
23	75	4	116		19	54	8	4		10		
24	73	5	28		30	86	8	4	2	2		
25	67	5	19		31	60	7					
26	80	3	89		27	78	9	4	2	2		8
27	92	2	105	1	23	55	8	3		4		
28	60	3	54		26	41	8	3		2		
29	81		41		16	46	8			1		
30	65	5	38		22	53	8	7	1	2		
MAY 1	80	7	90		28	82	12	2	1	1		7
2	71	10	24	1	50	71	7	1	2	2		
3	94	8	27	2	27	81	8	1		4		
4	78	5	151		28	67	6	5		2		
5	121	2	40	6	30	52	6	3				39
6	95		77	1	34	74	6	5	1	11		
7	73	8	84		23	61	8	4		4		
8	73	2	100		15	54	4	1	1	1		
9	72	7	52	2	18	69	3	5	2	1		3
10	77		24	1	28	55	6	3	2	7		
11	68	10	46		27	54	8	10	2	3		7
12	73	9	130		20	61	6	4		4		16
13	94	7	89		21	57	6	2	3	4		
14	57	4	35	1	36	75	15	2		4		3
15	62	5	10	1	25	93	9	7	1	7		3
16	78	3	7		24	60	8	3	4	3		
17	102	10	15	1	35	56	5	3	3	1		
18	70	12	113	1	24	53	10	2	1	4		
19	88		76		27	46	7	3		27		
20	92	1	98		19	49	17	3		3		
21	78	17	76		31	85	7	6		5		7
22	89	6	70		26	54				2		
23	83	5	142		23	50	5	1	1	3		
24	98	7	103		28	64	8	5	1	2		4
25	83	15	73		30	71	6	1		2		
26	90		56		26	49	3	3	2			
27	86	1	50	2	27	67	8	3				
28	97	2	86	2	36	49	3	4				
29	59	2	84	2	28	58	6	3	1	1		30
30	93	3		1	21	66	4	4	1	2		11
31	110	1	68		35	56	11			1		
JUN 1	76	16	114		29	112	9	3	2	2		4
2	108	17	86		32	66	10	8	3	5		19
3	112	15	101		28	84	7	1	2	3		6
4	105	19	84	2	25	73	10	3	2	6		
5	59	14	50	1	26	66	7	3		2		
6	87	11	68		14	57	5	3	2	5		
7	85	14	44		24	66	2	3	1	3		
8	77		68		24	43	2			1		
9	56		88		23	33	1	1		1		
10	71	2	58		41	37	6	2	1	2		17
11	48	16	38		32	62	7	1	3	2		
12	63	4	46		29	62	5	2		4		
13	65	4	32		28	48	7	1	3	2		
14	78	6	95		14	67	7	1		1		36

KILAUEA SUMMIT				KILAUEA FLANK			MAUNA LOA			TREMOR (MINUTES)		
DATE	SHORT PER.	LONG CALDERA	PERIOD	30 KM	KAO. & SW RIFT	UP. EAST RIFT	LOW. EAST RIFT	SHORT PER.	LONG PER.	NE RIFT	KILAUEA SHAL.	MAUNA LOA INT. DEEP
1989	CALD.	A B C										
JUN15	77	7	62		33	69	7		1			
16	115		61	1	17	56	4	2	1			
17	75	18	81	1	36	62	8	1		6		
18	60	31	69	1	26	44	5	3		2		
19	73	22	59		24	62	5	2		12		
20	71	12	87		37	60	8	4	1	1		
21	57		52		19	65	6	2	1			
22	76	9	80		33	61	4	3	1	3		
23	72	6	43		29	73	9	4	1			
24	116	5	54	1	29	60	16	3		3		
25	94	22	49		43	636	2021	4		3		
26	188	10	34	1	52	445	1254	3	2	6		
27	164	17	43		29	319	683	2	5	3		25 6
28	147	7	74		41	233	387	8	2	2		6
29	105	5	82	1	19	196	306	3	1	2		20
30	115	5	40	1	33	155	280	1	1	3		45
JUL 1	75	3	48	2	32	153	229	3		1		
2	63	3	67	1	38	140	175	2		8		
3	63		83		35	63	156	1		2		
4	55	1	142	1	27	127	153	1	2	4		37
5*	18	2	25		10	41	100		1	3		
6	59	1	56		23	90	113	1	1	3		8
7	68		95	1	36	72	151	1		4		
8	45	11	89	1	22	67	70		1			
9	47	1	98		29	87	129	3		6		
10	56	3	74		22	86	135	1	1	1		
11	46	3	97	1	27	89	100			3		
12	19	101	43		27	77	78	1		4		6
13	30	183	53		30	88	70	4	1	1		
14	31	99	53		27	90	72	4	1			
15	34	88	92		22	104	89			4		6
16	27	48	59		25	79	67	3		1		
17	50	8	74		40	70	70	7	5	8		
18	71	9	42		27	69	73	1		6		
19	99	10	56		20	73	42	3				
20	118	5	86	1	24	89	43	3		1		18
21	66	1	35		19	62	49			1		
22	111		25		21	61	60	1				
23	134		79		17	71	31	1	4	2		5
24	69	3	65		30	108	33	1	5	4		4
25*			83		35	94	41	3	2	2		8 9 7
26	38	1	6		22	60	26			3		
27	33	4	75		32	77	21	1		1		
28	52		135		27	67	17	3	1			
29*	9		211		22	57	6			2		6
30*			59	1	39	61	15	2	1	2		
31	57	1	26		30	104	21	1	7	1		
AUG 1	57	3	12		21	54	21	2	2	2		
2	67	1	15	1	30	73	21	12	3			
3	67	5	47		24	69	25	1	2	4		12
4	61	5	52		27	100	27	1		3		
5	86	6	52		19	95	38	2		2		
6	67	6	84	1	21	82	21	3				9
7	71	5	90		18	80	29	1		7		15
8	52	4	66		25	63	29	2		3		

KILAUEA SUMMIT				KILAUEA FLANK			MAUNA LOA			TREMOR (MINUTES)		
DATE	SHORT PER.	LONG CALDERA	PERIOD	30 KM	KAO. & SW RIFT	UP. EAST RIFT	LOW. EAST RIFT	SHORT PER.	LONG PER.	NE RIFT	KILAUEA SHAL.	MAUNA LOA INT. DEEP
1989	CALD.	A	B C									
AUG 9	46	2	42	2	24	80	28	1				
10	100	1	29		21	71	43		5	2		22
11	73		64		17	36	38	1				15
12	45	4	39		23	71	30	4		2		13
13	70		41		20	87	32	3	1	1	4	
14	46	4	51		28	82	34	5		5		
15	45	19	31		19	70	30	1	1	5		26
16	57	30	53		16	80	26	3	2	1		
17	58	14	26		29	57	38	4	1			
18	108	14	15		28	79	24	1	1	3		
19	107		28	1	16	77	23	1				20
20	68	11	28		24	61	25	1		1		
21	65	12	80		27	101	19	3	1	3		
22	60	15	76	1	33	84	55	1	1			23
23	92	30	86		37	59	23	2	1	6		
24	81	17	79		35	103	25	1		1		
25	110	5	84		46	80	27	1		2		32
26	112	9	53	1	26	81	32	2	1	4		4
27	118	12	49		29	106	34			6		
28	102	10	45		41	112	30	5	1			
29	84	11	124		25	66	34					4
30	73	12	71		21	71	29	1	1	2		
31	81	4	49		26	60	29			2		
SEP 1	69	1	30		14	62	18			2		
2	52		24		16	50	30					
3	57		3		21	48	26					4
4	78	4	4		28	68	29	8	1	7		
5	71	4	24		27	87	34	6	1	5		
6	58	10	42		29	90	32			5		
7	49	5	60	1	15	74	22	6		4		
8	77	11	85	1	19	62	14					
9	78	3	66		24	80	13	2				
10	59	7	120	1	35	59	20	2		5		23
11	41	8	136		35	65	21	1	2	3		
12	51	7	54		25	94	22	2	1	3		11
13	62	10	14		28	66	26	1	2			
14	71	10	33		34	54	7	3		5		17
15	62	25	114		21	66	26		2			
16	86	24	51		39	79	29	3	1	2		
17	87	41	16		28	75	24					
18	86	70	9		29	61	16	3	2	8		
19	63	16	9		35	96	29	3		2		4
20	57	6	7		34	91	15	4		10		4
21	66	1	8		25	72	14	2	1	2	7	
22	68		4		18	79	19	1	2	2		
23	67	3	27		27	59	14	1		2		
24	77	4	17		18	68	17			3		32
25	57	2	23		30	62	23	2	1	1		
26	40	65	25		23	72	22	1	1	1		
27	58	425	30		24	70	19	2		3		
28	44	322	103		29	81	8	4	1	1		29
29	46	22	91		19	43	16			1		30
30	33		82		20	50	6	1				20
OCT 1	57	10	147	1	41	69	10	3	2	5		49
2	58	8	150		26	61	8	2		1		



KILAUEA SUMMIT					KILAUEA FLANK			MAUNA LOA			TREMOR (MINUTES)		
DATE	SHORT PER.	LONG CALDERA	PERIOD	30 KM	KAO. & SW RIFT	UP. EAST RIFT	LOW. EAST RIFT	SHORT PER.	LONG PER.	NE RIFT	KILAUEA MAUNA LOA		
1989	CALD.	A B C									SHAL.	INT.	DEEP
OCT 3	16	1263	71		28	59	7	3		4			39
4	54	8	161		31	52	14	1		4			
5	97	5	67	1	32	67	20	1	1				20
6	53	7	68	1	34	67	13		1	3			
7	73	8	108		38	65	18	7	2	1			
8	52	8	91		32	63	12	1		1			
9	66	12	77		22	75	17	1		2			14
10	51	9	297		23	66	11	1		1			
11	62	33	133		23	38	13			3			
12	46	69	44		32	82	17			2			
13	61	31	23		38	58	9						
14	43	4	24		12	35	13						
15	68	4	43	1	38	99	15	2	1			7	
16	41	3	85		27	72	10	1	2				
17	44	6	54		45	74	15	1	1	3			
18	69	6	120		35	56	20	2		2			
19	65	6	278		29	38	9	2		5			
20	74	2	30		12	84	17	1	2	3			
21	77	6	37	3	21	51	12	1	3				
22	90	5	26		28	68	15	3	2	5			10
23	74	4	2		23	72	18		1	2		8	61
24	87	2	3		33	65	22		2	4			
25	84	2	5		34	65	14	4		1			20
26	72	2	1		32	77	19	1		5			
27	87	2	2		22	67	7	2		3			44
28	75	5	9		30	76	24	4	3	4			
29	61	2	37		31	81	13	2		4			6
30	57	1	49		22	46	10	3	2	1			
31	56	5	88		45	63	20	4	1	1			
NOV 1	50		157		21	75	12	1	1	1			
2	35	4			37	67	12	2	1	2			2
3	39	2	7		23	37	10			1			3
4	86	3			30	31	29						15
5	56	10	7		42	57	28			1			3
6	49	10	1		27	54	8			1		2	
7	55	6	3		18	50	11			4			
8	42	3			42	80	9		3	3			11
9	67	1	5		22	60	14	3	12	1			
10*	41	1	1		29	63	17	1					
11	50		5	1	30	61	11	1	4	1			7
12	60	2			29	92	12		2	1			40
13	37		3		35	62	18	3	1	6			21
14	25		6		39	73	21		1	1			
15	61		21		37	78	25		1	1		3	
16	82		1 32		33	59	19	7	2	4			24
17	62	3	21		31	59	18		2	2			
18	80	2	33		26	57	17	2	1	2			
19	80	1	37		24	59	27			2			47
20	92	1	38	1	38	58	18	1		1			3
21	68	4	54		24	80	11	1					48
22	62	3	59		19	52	28						3
23	55	6	101	1	38	57	17	2		2			
24	61	4	86	1	29	73	15	2		3			10
25	75	3	174		38	77	22	1					16
26	54	10	136		35	56	17	3	1	2			3

KILAUEA SUMMIT				KILAUEA FLANK			MAUNA LOA			TREMOR (MINUTES)		
DATE	SHORT PER.	LONG PER.	PERIOD	30	KAO. UP. LOW.	SHORT LONG NE	KILAUEA MAUNA					
1989	CALD.	A	B C	KM	& SW EAST EAST	PER. PER. RIFT	SHAL.	INT.	DEEP	LOA		
NOV27	33	24		86	30	52	7	1	1	3		34
28	37	625		90	33	61	13		1	4		
29	49	792		76	41	77	13	1		4		37
30	54	100		32	25	77	14					
DEC 1	69	31		22	57	73	16	2		2		23
2	117	6		31	25	65	26	2				
3	62	5		78	26	73	12	1		2		
4	62	2		125	32	57	6		1			
5	88	2		149	49	71	10	1	1	1		
6	116	5		138	42	67	9	1	1	1		19 5
7	82	2		146	27	70	26	3	3	4		19 3
8	81			98	43	72	17		1	1		3
9	83			167	24	77	10	1		1		10
10	66	1		64	25	76	14			2		
11	80	1		73	31	56	22			2		17
12	81	3		52	38	59	13	8	2	1		24
13	63	5		58	34	70	7	3	2	3		
14	66	2		20	22	67	15	1		1		104
15	82	5		25	31	52	11					
16	73			55	40	48	7					37
17	82	5		58	22	69	20	1		2		
18	101	1		60	24	109	18	3		1		
19	86			70	30	65	10					
20	86	2		29	29	59	14	1	1	3		3
21	109	12		13	38	63	9	1				
22	63	11		26	28	76	18	3	3			
23	93	3		63	32	69	16	4	1			
24	91	1		38	38	59	17	2	1	2		
25	91			38	37	86	19					5
26	67	1		15	15	68	16	1		8		
27	70			5	41	205	15	3	1	3		3
28	82	1		61	32	115	14	1	1	2		
29	75			87	22	91	22	3		1		
30	59	1		51	22	67	27	5	1	4		
31	76			38	15	59	21			2		16

\*Data incomplete - station(s) or recorder not in operation.

Table 4. Coordinates of named regions used for classifying earthquakes.

All earthquakes are in one of the following groups, identified by a numerical class or three-letter code:

--Shallow:

- 1 SNC - Shallow north caldera (0-5 km)
- 2 SSC - Shallow south caldera (0-5 km)
- 3 SEC - Shallow east caldera (0-5 km)
- 4 SER - Shallow east rift (0-5 km)
- 5 SME - Shallow middle east rift (0-5 km)
- 6 KOA - Koa'e fault zone (0-5 km)
- 7 SSF - Shallow south flank (0-5 km)
- 8 SLE - Shallow lower east rift (0-5 km)

--Intermediate depth:

- 9 SF1 - Kilauea south flank (5-13 km) (west end)
- 10 SF2 - Kilauea south flank (5-13 km)
- 11 SF3 - Kilauea south flank (5-13 km)
- 12 SF4 - Kilauea south flank (5-13 km)
- 13 SF5 - Kilauea south flank (5-13 km) (east end)
- 14 LER - Lower east rift (5-99 km)
- 15 MLO - Mauna Loa (0-13 km)
- 16 LSW - Lower southwest rifts of Kilauea and Mauna Loa (0-13 km)
- 17 GLN - Glenwood (0-13 km)
- 18 SWR - Southwest rift (0-13 km)
- 19 INT - Intermediate caldera (5-13 km)
- 20 KAO - Kaoiki (0-13 km)

--Deep:

- 21 DEP - Deep Kilauea (>13 km) (below regions 1-13, 17-19)
- 22 DLS - Deep lower SW rift (>13 km) (below region 16)
- 23 DML - Deep Mauna Loa (>13 km) (below regions 15, 20)

--Outer regions, all depths:

- 24 LOI - Loihi
- 25 KON - South Kona
- 26 HUA - Hualalai
- 27 KOH - Kohala
- 28 KEA - Mauna Kea
- 29 HIL - Hilo
- 30 DIS - Distant, everywhere else

Table 4 continued. The latitude and longitude limits of the regions are given below. When the coordinates imply an overlap, precedence is given as in the maps.

No.	Code	N. Lat.	S. Lat.	W. Lon.	E. Lon.
1	SNC	19 28.0	19 24.5	155 19.0	155 14.0
2	SSC	19 24.5	19 22.0	155 19.0	155 16.5
3	SEC	19 24.5	19 22.0	155 16.5	155 14.0
4	SER	19 26.0	19 20.5	155 14.0	155 07.2
5	SME	19 26.0	-----	155 07.2	155 00.0
6	KOA	19 22.0	19 20.5	155 17.0	155 14.0
7	SSF	-----	19 10.0	155 17.0	155 00.0
8	SLE	19 32.0	19 16.0	155 00.0	154 40.0
9	SF1	19 22.0	19 10.0	155 17.0	155 14.5
10	SF2	19 26.0	19 10.0	155 14.5	155 12.3
11	SF3	19 26.0	19 10.0	155 12.3	155 09.1
12	SF4	19 26.0	19 10.0	155 09.1	155 05.3
13	SF5	19 26.0	19 10.0	155 05.3	155 00.0
14	LER	19 32.0	19 16.0	155 00.0	154 40.0
15	MLO	19 35.0	19 19.0	155 35.0	155 19.0
16	LSW	19 19.0	18 40.0	155 43.0	155 25.0
17	GLN	19 35.0	19 26.0	155 19.0	155 00.0
18	SWR	19 22.0	19 10.0	155 25.0	155 17.0
19	INT	19 28.0	19 22.0	155 19.0	155 14.0
20	KAO	19 30.0	19 19.0	155 32.0	155 19.0
21	DEP	19 35.0	19 10.0	155 25.0	155 00.0
22	DLS	19 19.0	18 40.0	155 43.0	155 25.0
23	DML	19 35.0	19 19.0	155 35.0	155 19.0
24	LOI	19 10.0	18 40.0	155 25.0	155 00.0
25	KON	19 39.0	19 00.0	156 20.0	155 43.0
26	HUA	19 55.0	19 39.0	156 20.0	155 43.0
27	KOH	20 25.0	19 55.0	156 20.0	155 34.0
28	KEA	20 25.0	19 35.0	155 34.0	154 40.0
29	HIL	19 47.0	19 32.0	155 09.0	154 40.0

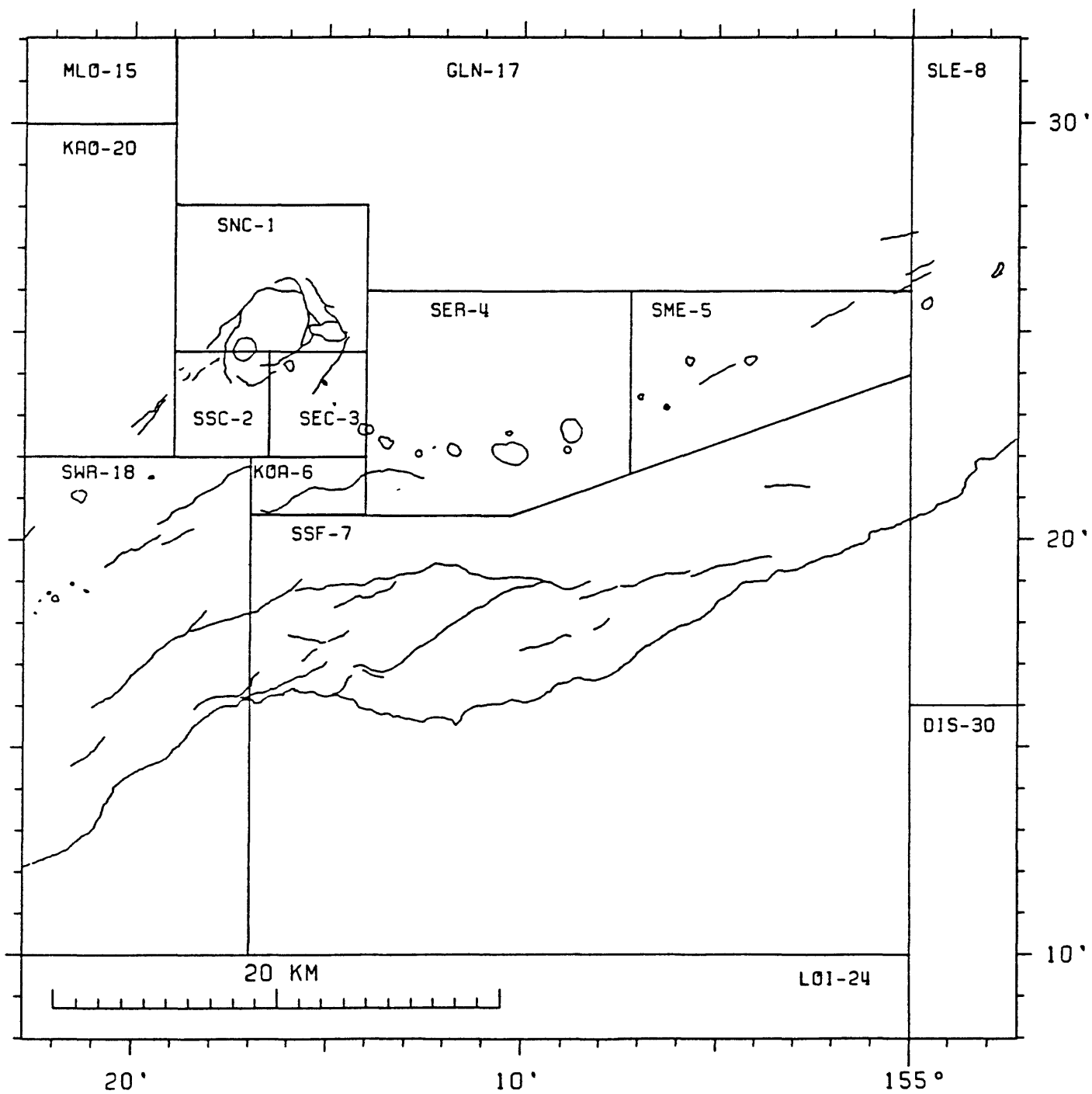


Figure 5. Earthquake classification, shallow (0-5 km deep), for Kilauea and the east flank of Mauna Loa.

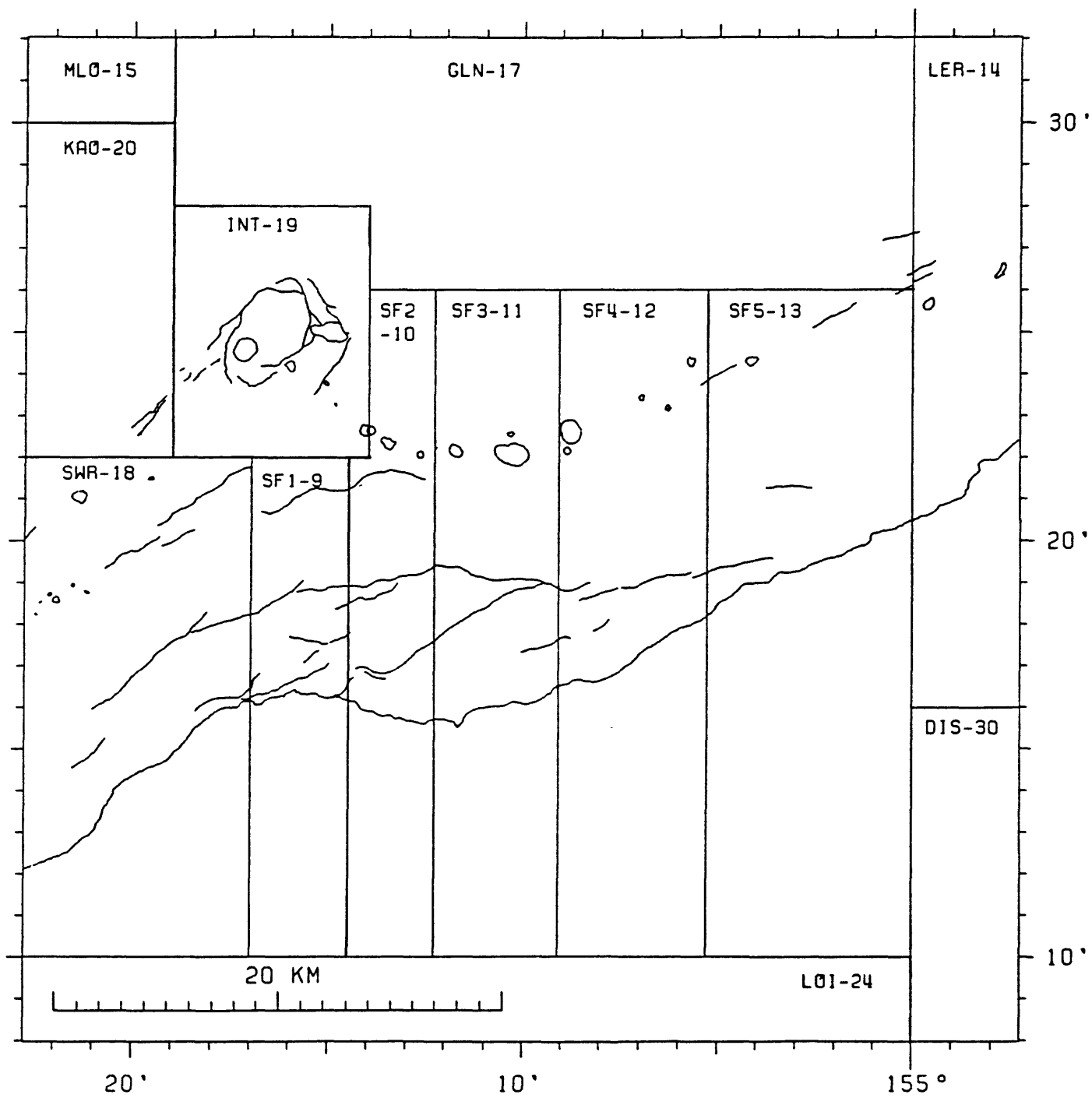


Figure 6. Earthquake classification, intermediate (5.1-13 km deep), for Kilauea and the east flank of Mauna Loa.

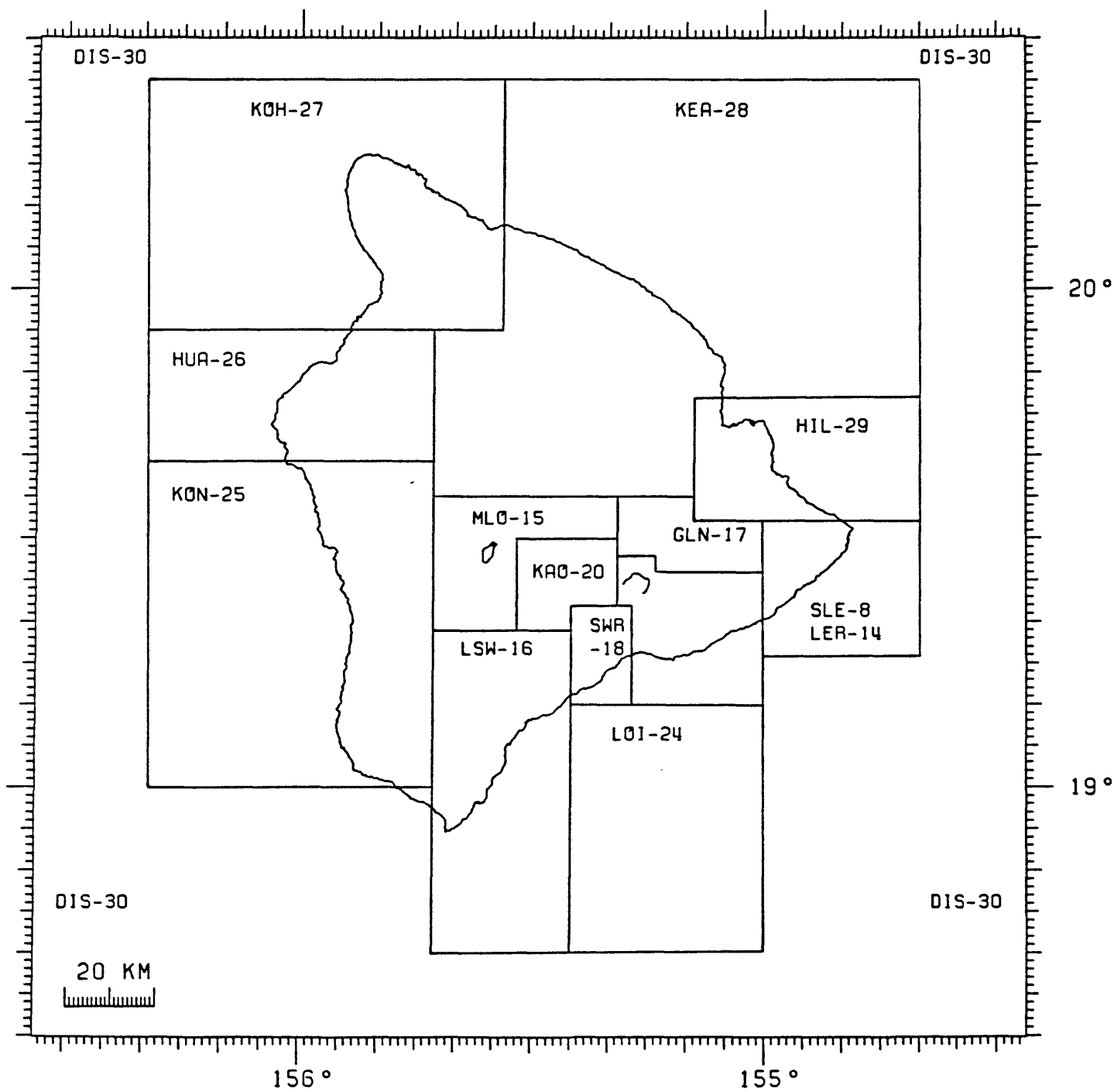


Figure 7. Earthquake classification, crustal (0-13 km deep), for the Island of Hawaii.

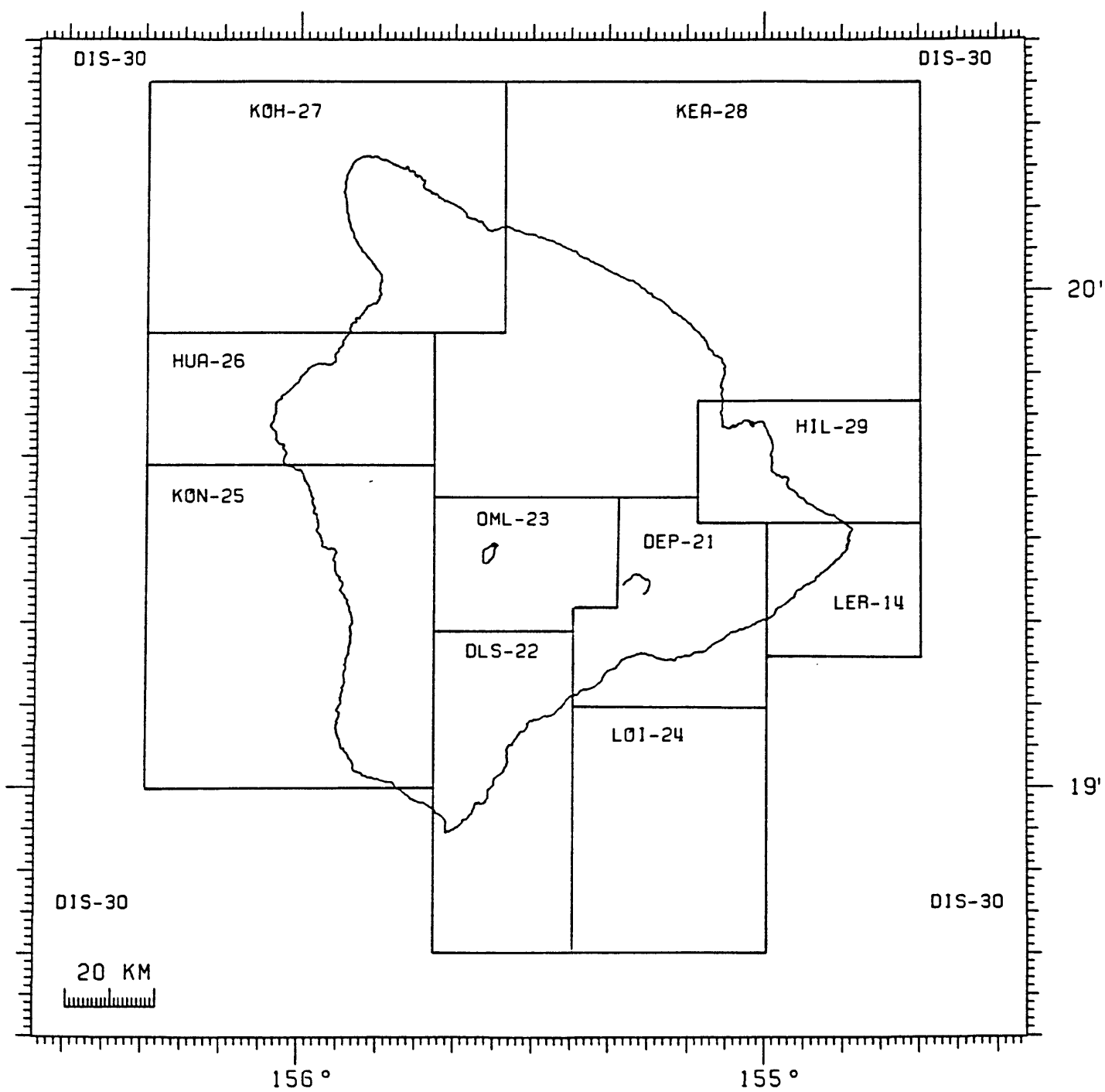


Figure 8. Earthquake classification, deep (greater than 13 km deep), for the Island of Hawaii.



Figure 9. 1989 Earthquake locations, Hawaiian Islands,  
0–60 km deep,  $M \geq 3.5$ .

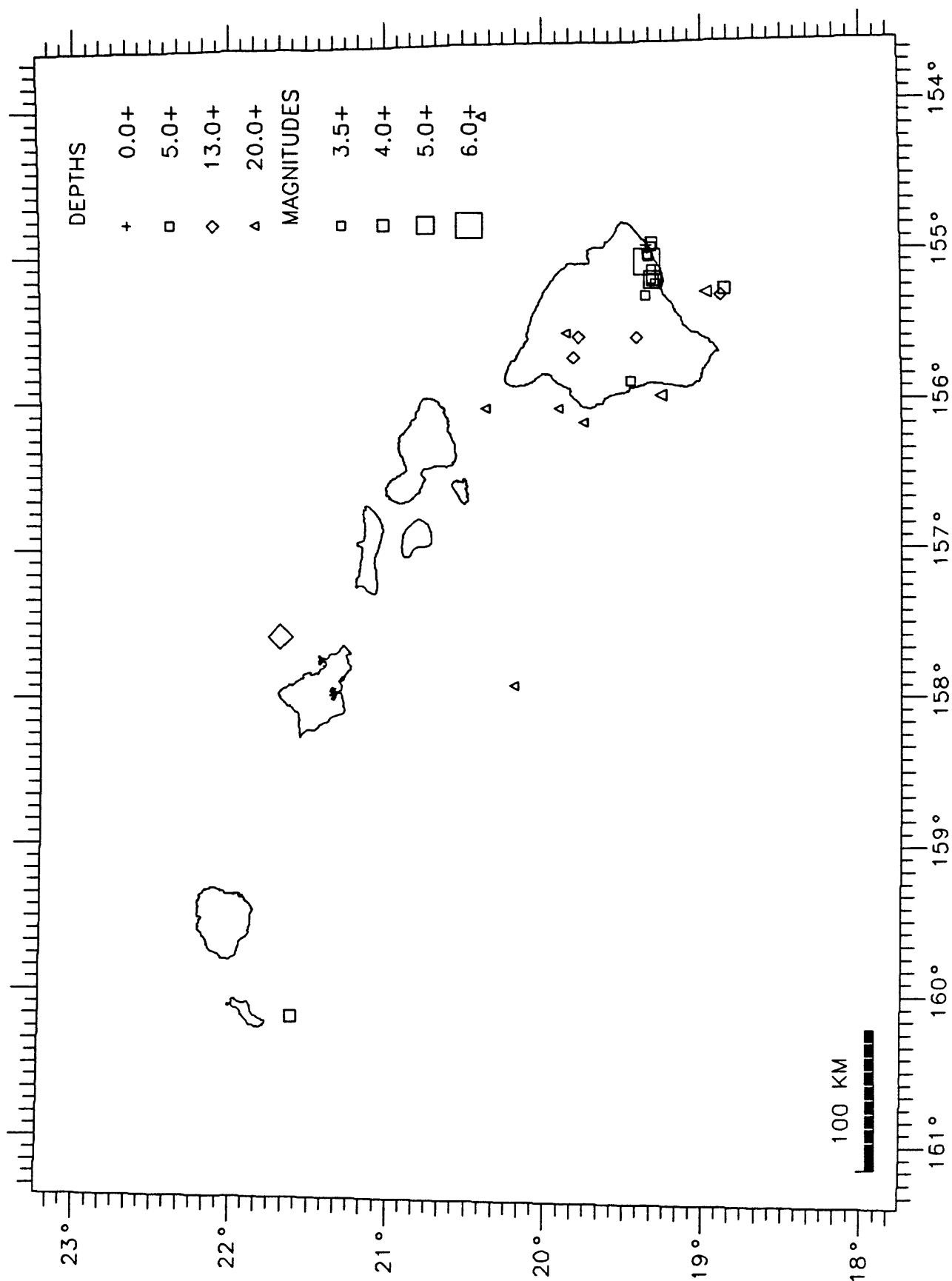


Figure 10. 1989 Earthquake locations, Hawaii Island, shallow (0–5.0 km deep),  $M \geq 2.0$ .

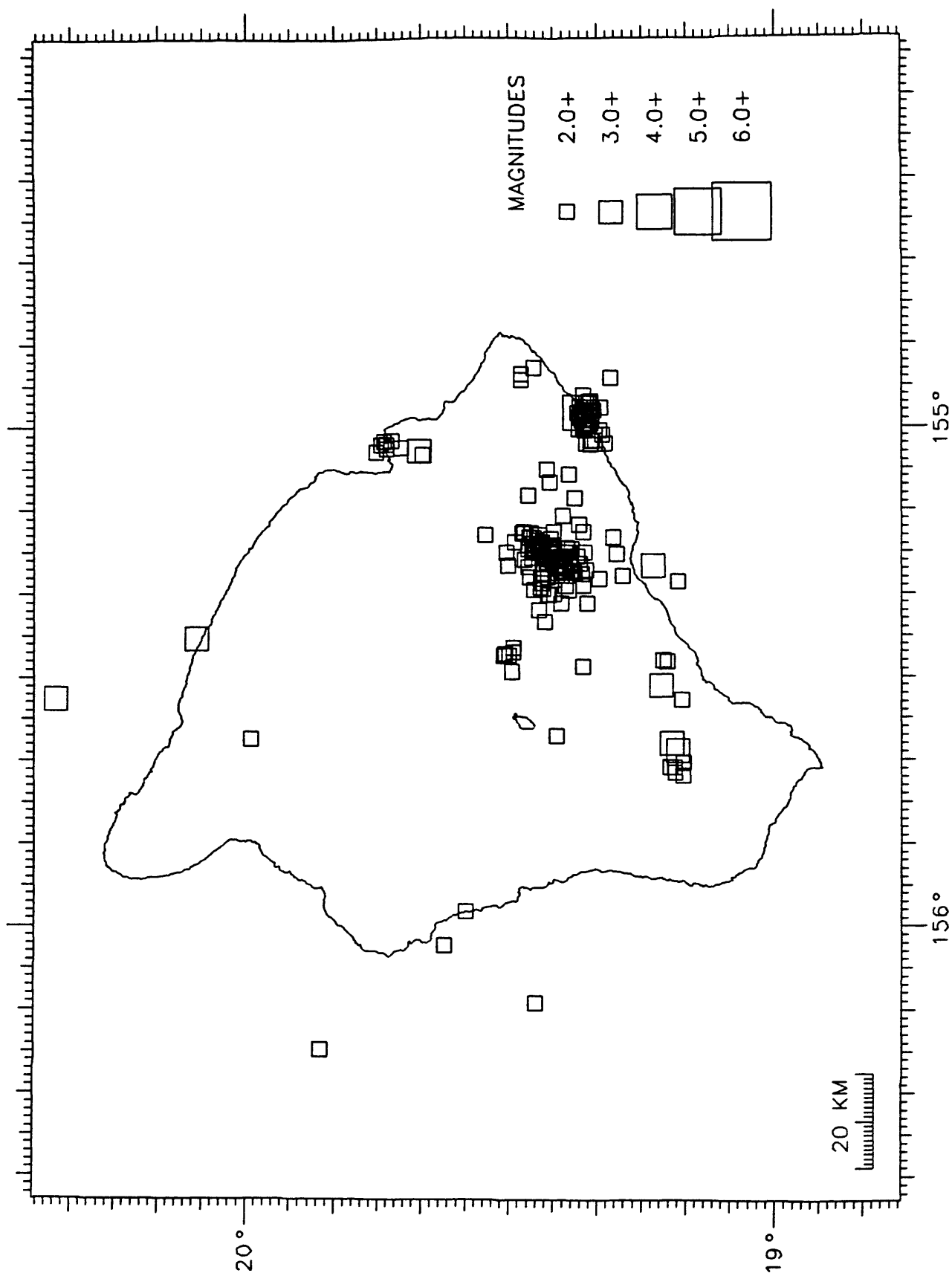


Figure 11. 1989 Earthquake locations, Hawaii Island, intermediate (5.1–13.0 km deep),  $M \geq 2.0$ .

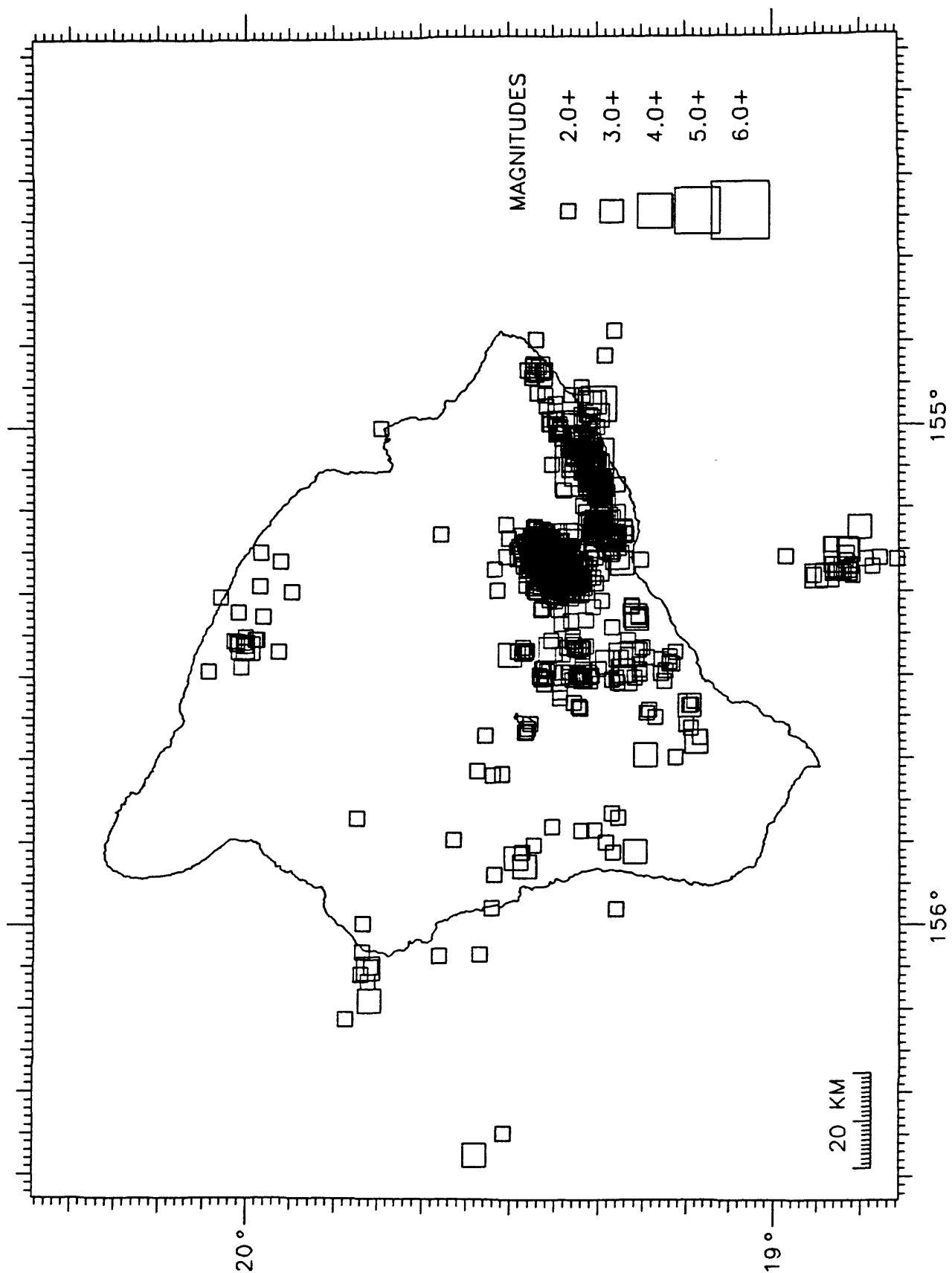


Figure 12. 1989 Earthquake locations, Hawaii Island, deep (13.1–60.0 km deep),  $M \geq 2.0$ .

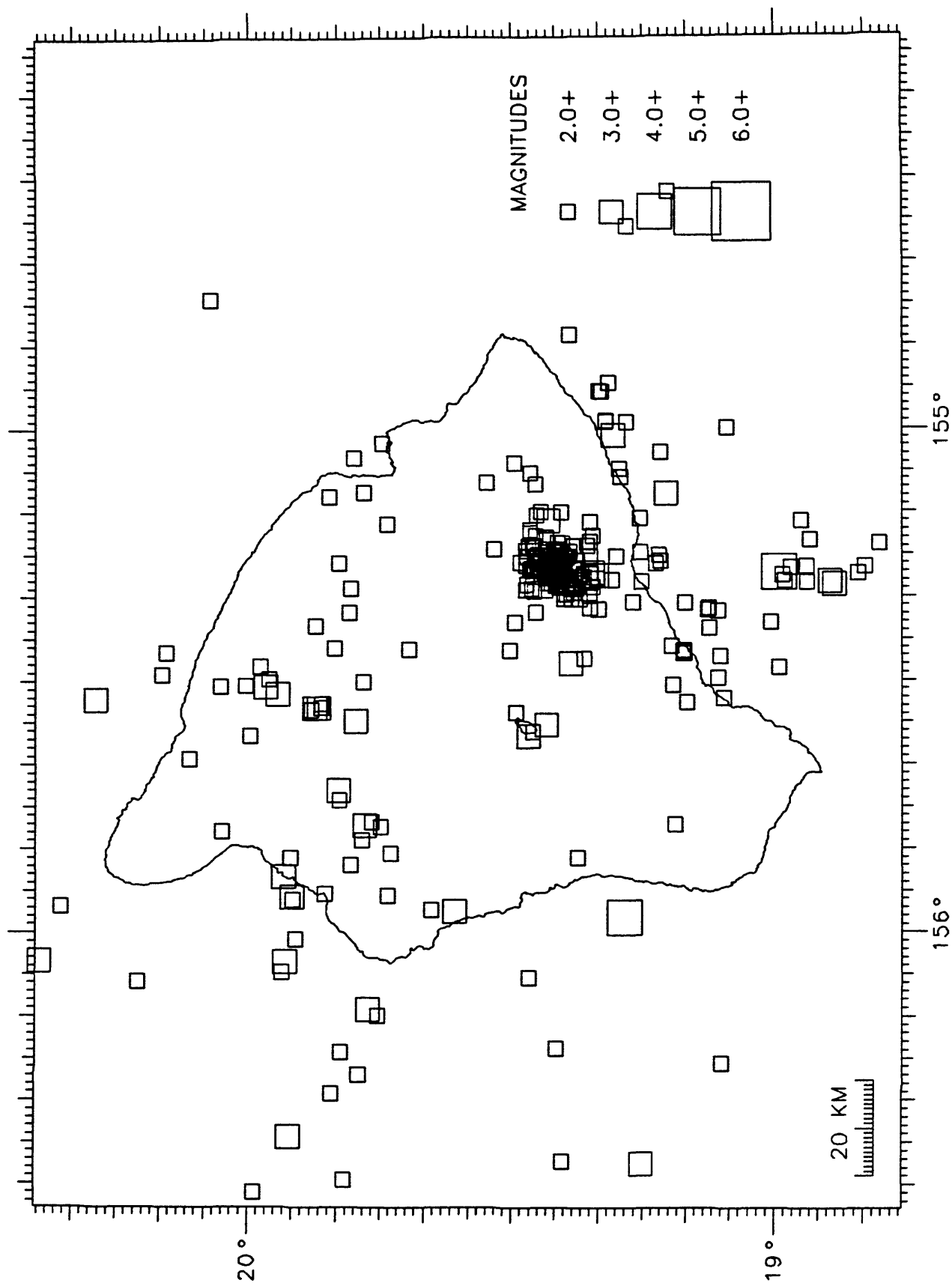


Figure 13. 1989 Earthquake locations, Kilauea summit, shallow (0–5.0 km deep),  $M \geq 1.0$ .

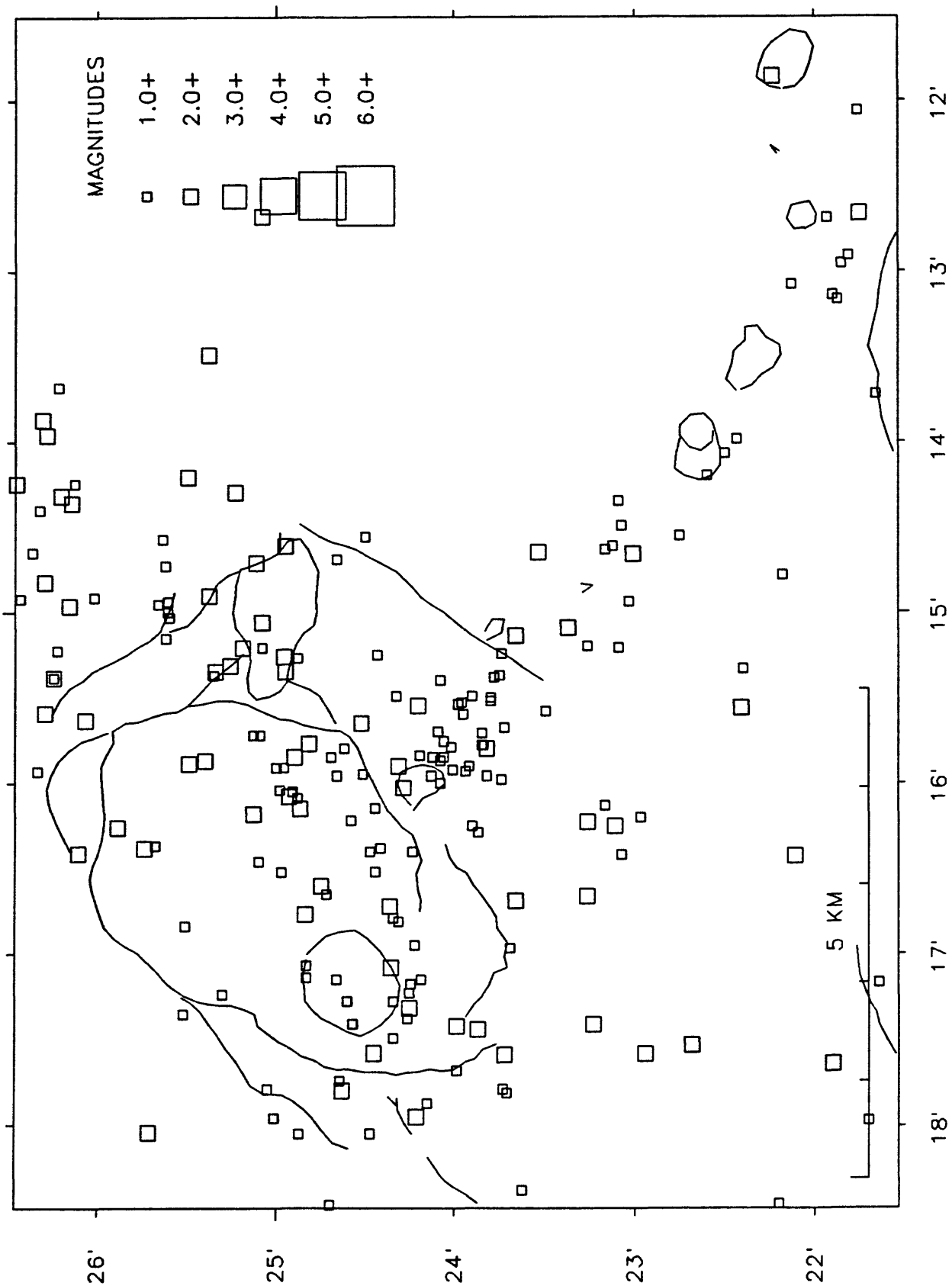


Figure 14. 1989 Earthquake locations, Kilauea summit, intermediate (5.1–13.0 km),  $M \geq 1.0$ .

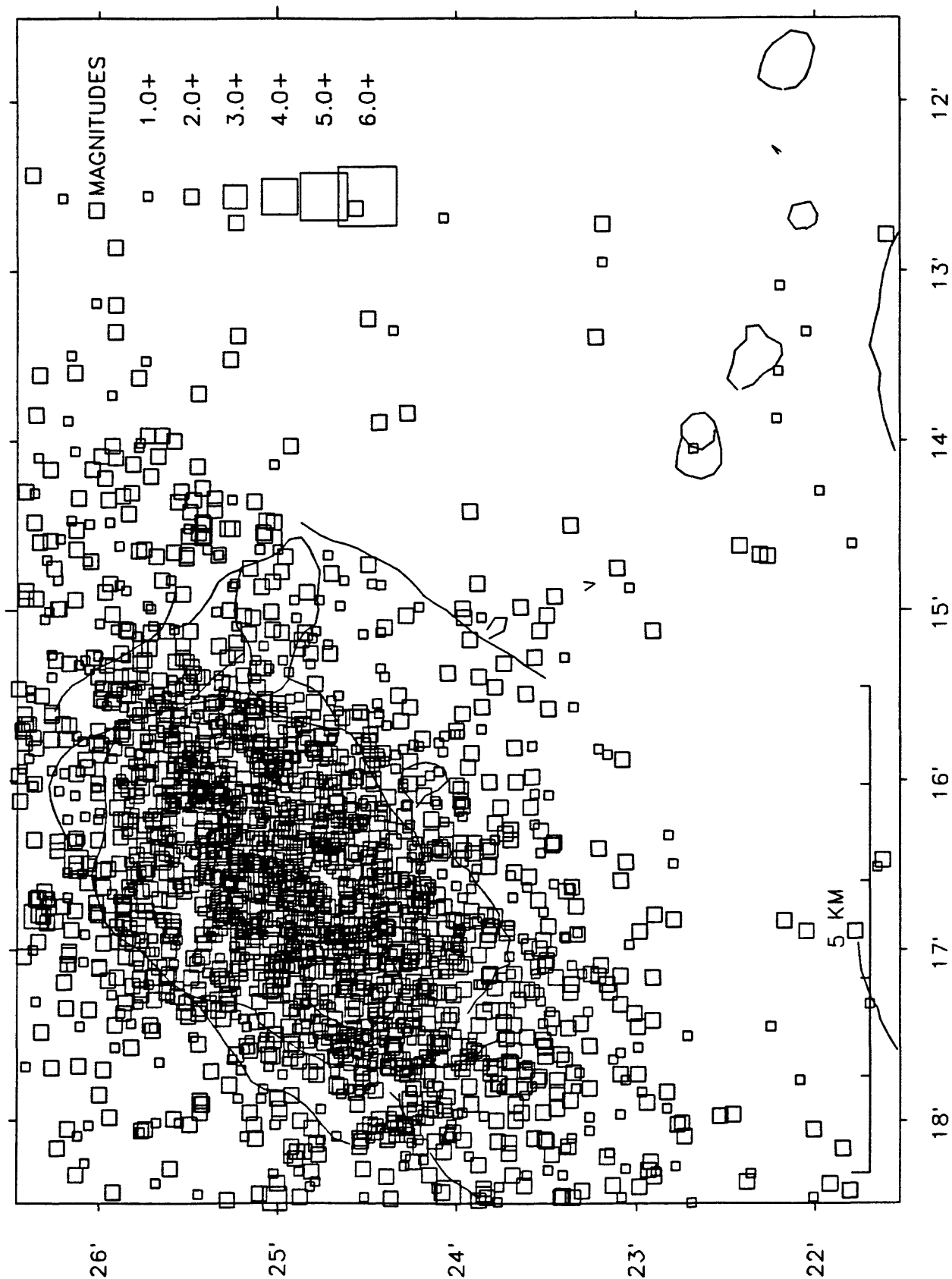


Figure 15. 1989 Earthquake locations, Kilauea summit,  
deep (13.1–60.0 km deep),  $M \geq 1.0$ .

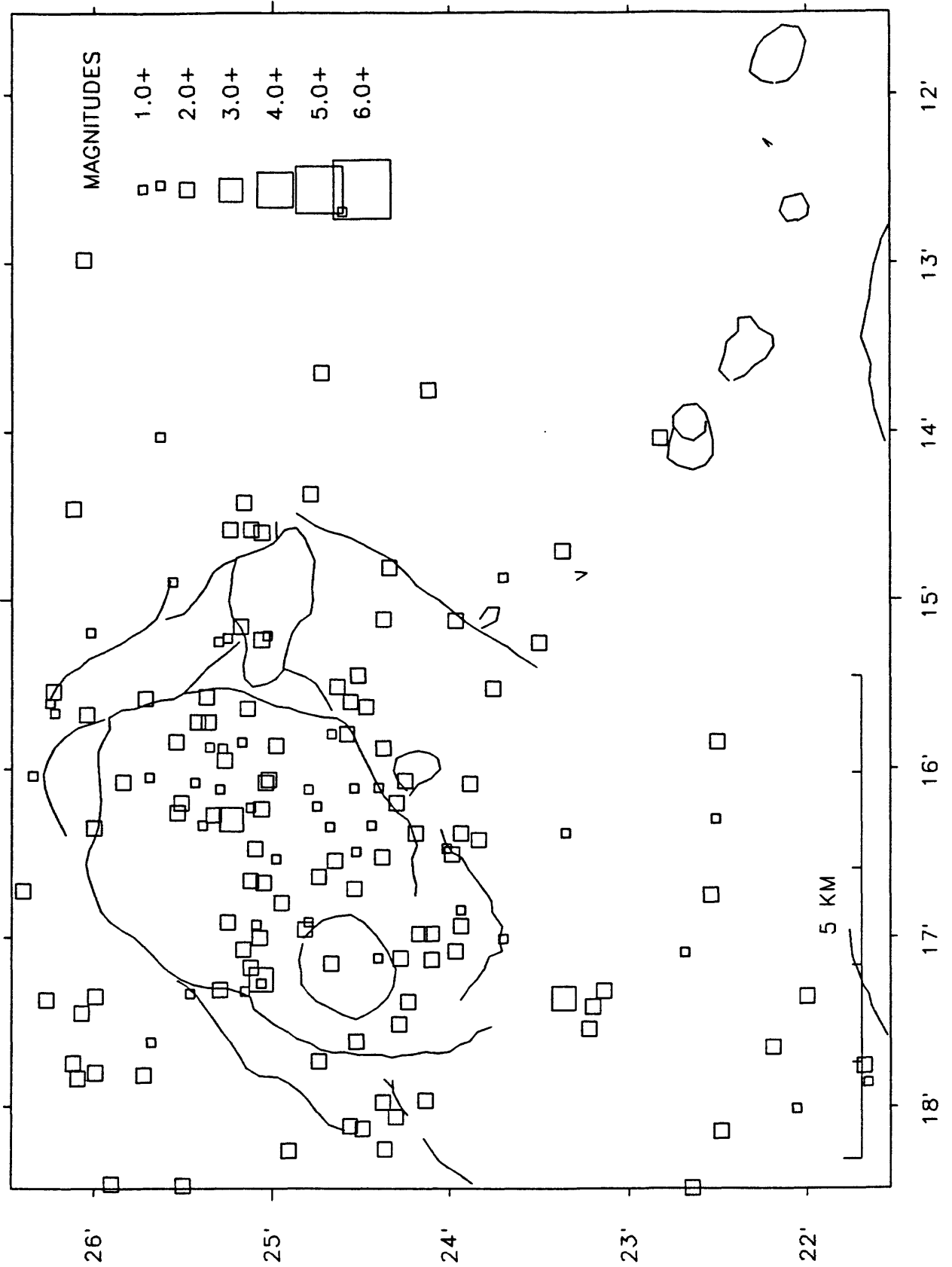


Figure 16. 1989 Earthquake locations, Kilauea south flank, shallow (0–5.0 km deep),  $M \geq 2.0$ .

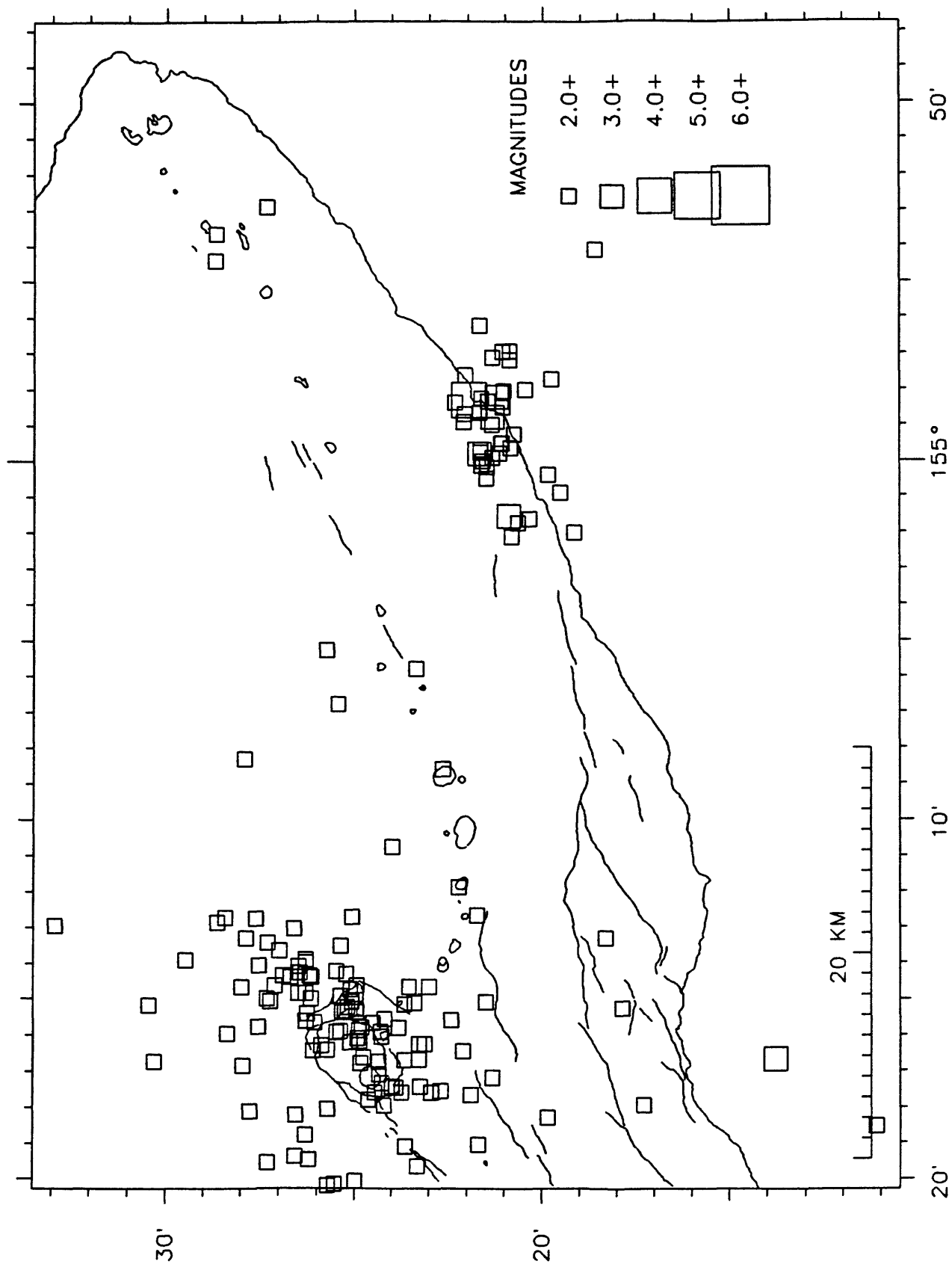




Figure 17. 1989 Earthquake locations, Kilauea south flank, intermediate (5.1–13.0 km deep),  $M \geq 2.0$ .

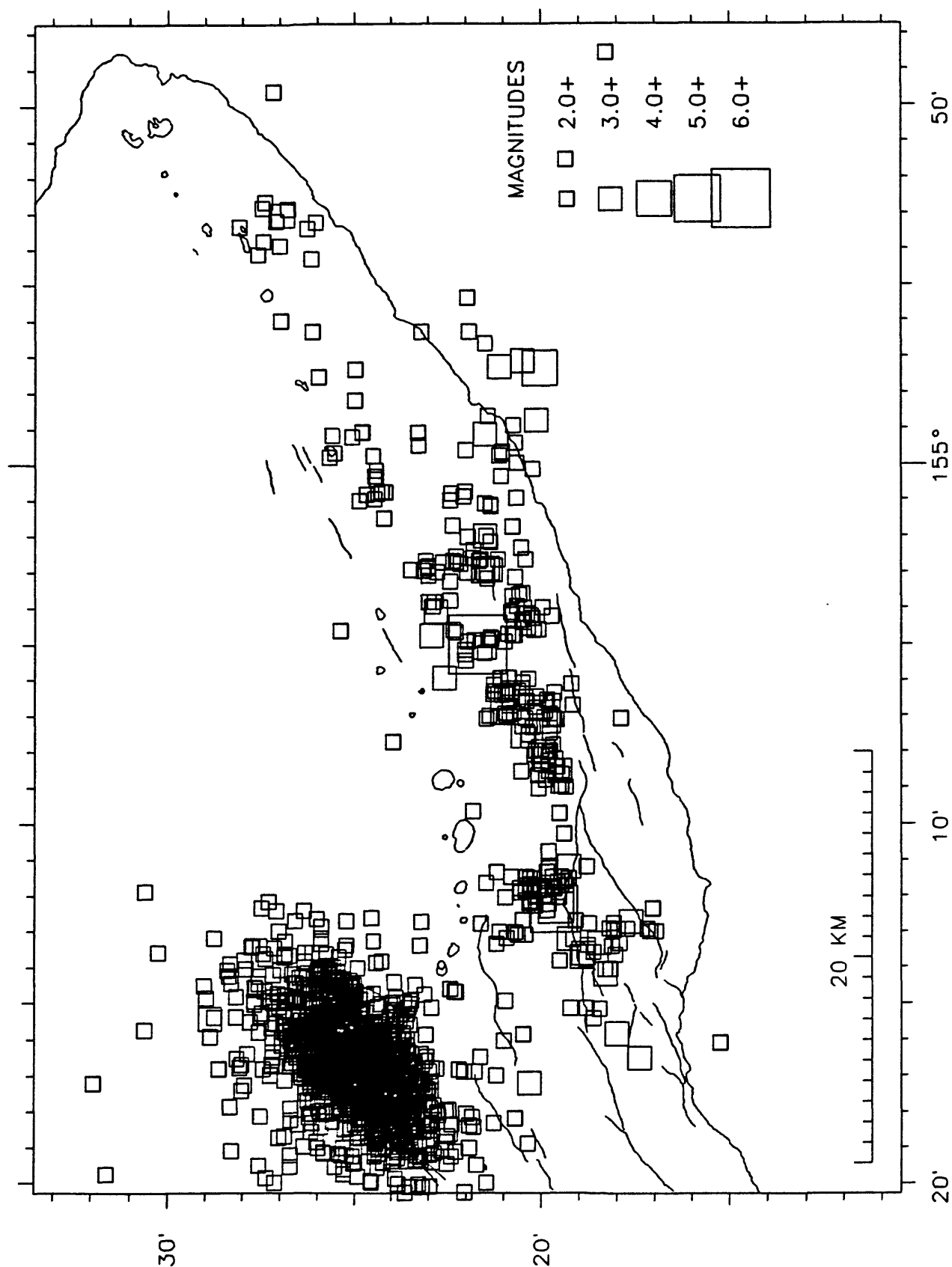


Figure 18. 1989 Earthquake locations, Kilauea south flank, deep (13.1–60.0 km deep),  $M \geq 2.0$ .

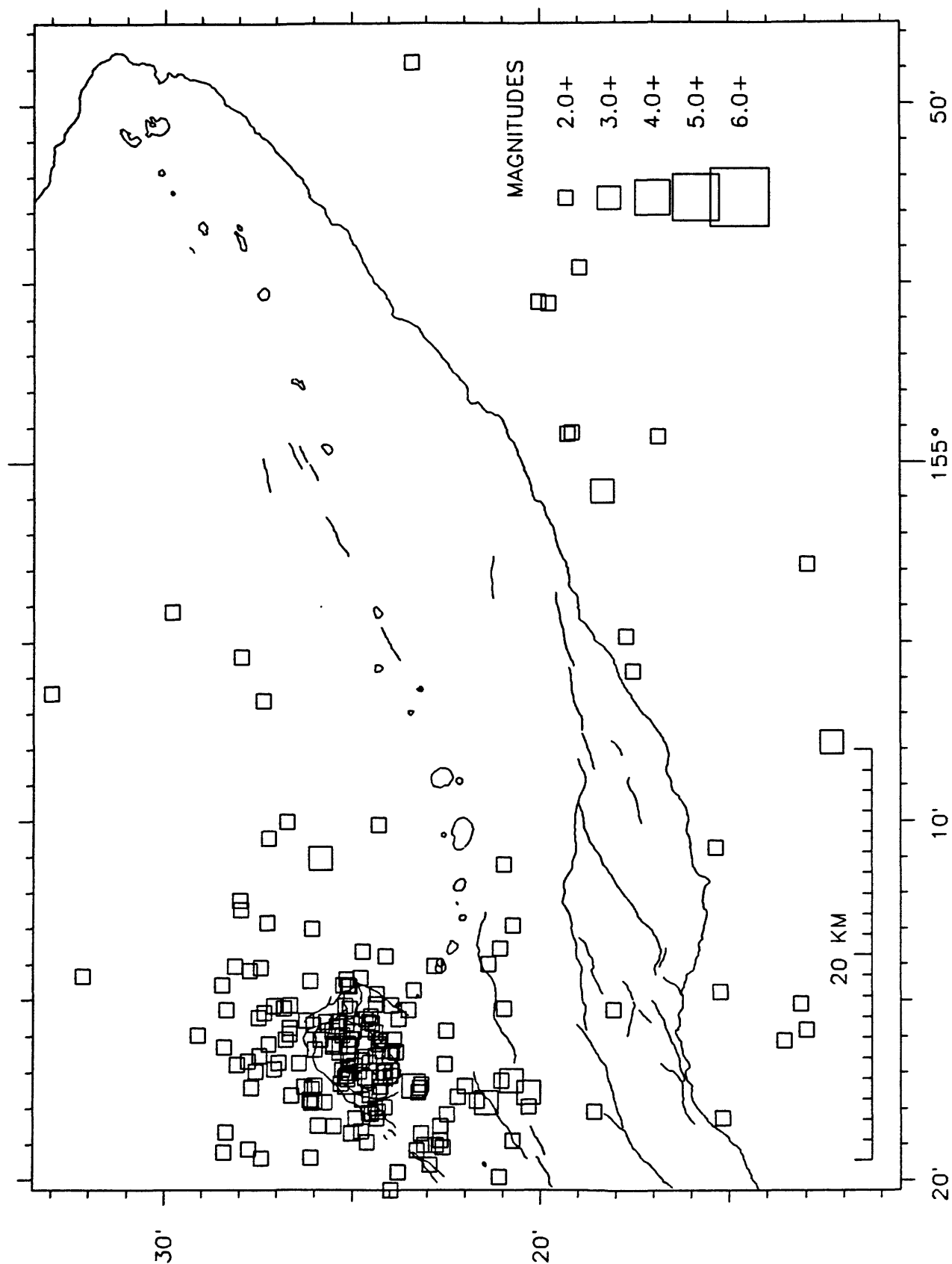


Figure 19. 1989 Earthquake locations, Mauna Loa summit, shallow (0–5.0 km deep),  $M \geq 2.0$ .

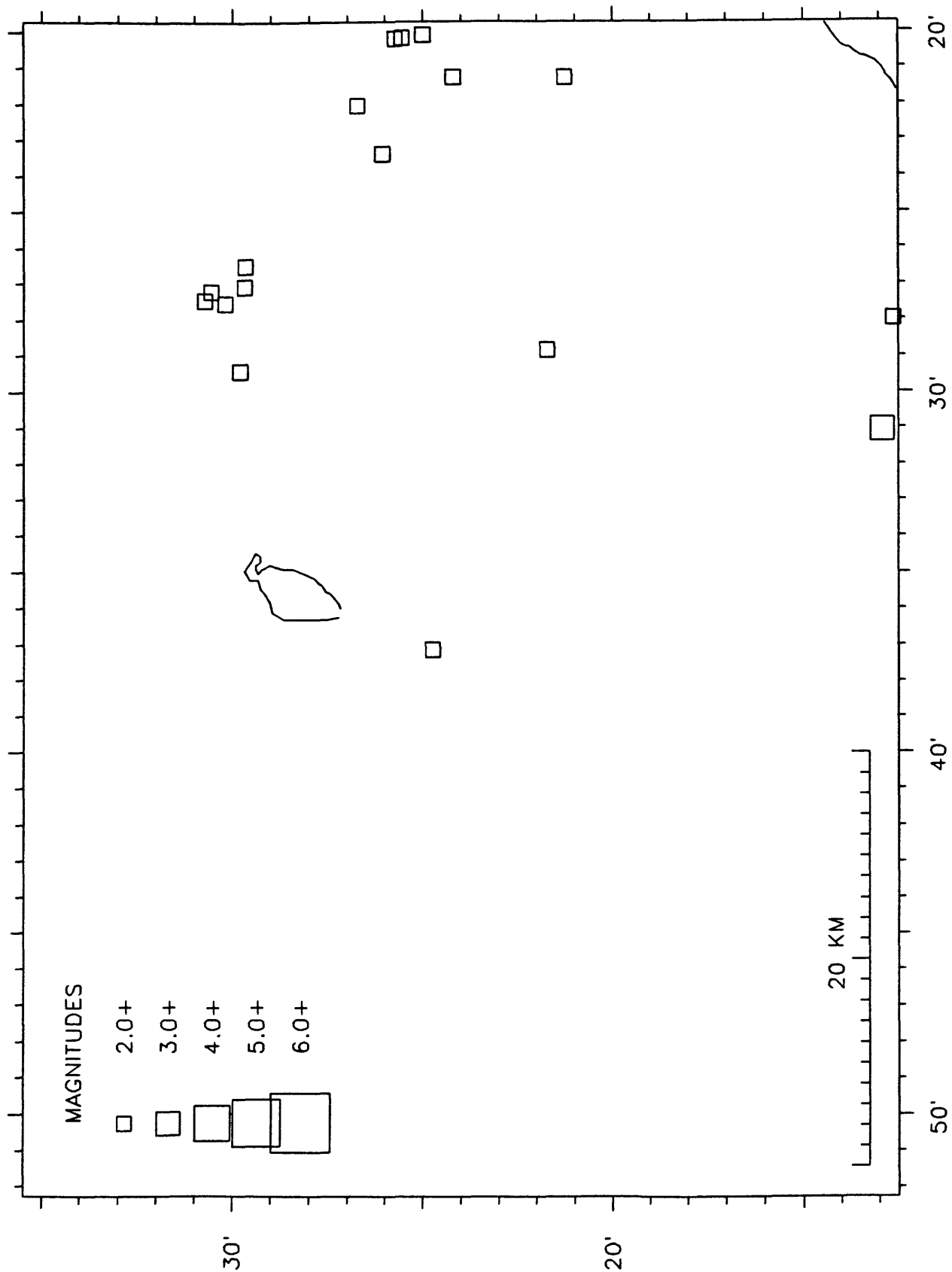


Figure 20. 1989 Earthquake locations, Mauna Loa summit, intermediate (5.1–13.0 km deep),  $M \geq 2.0$ .

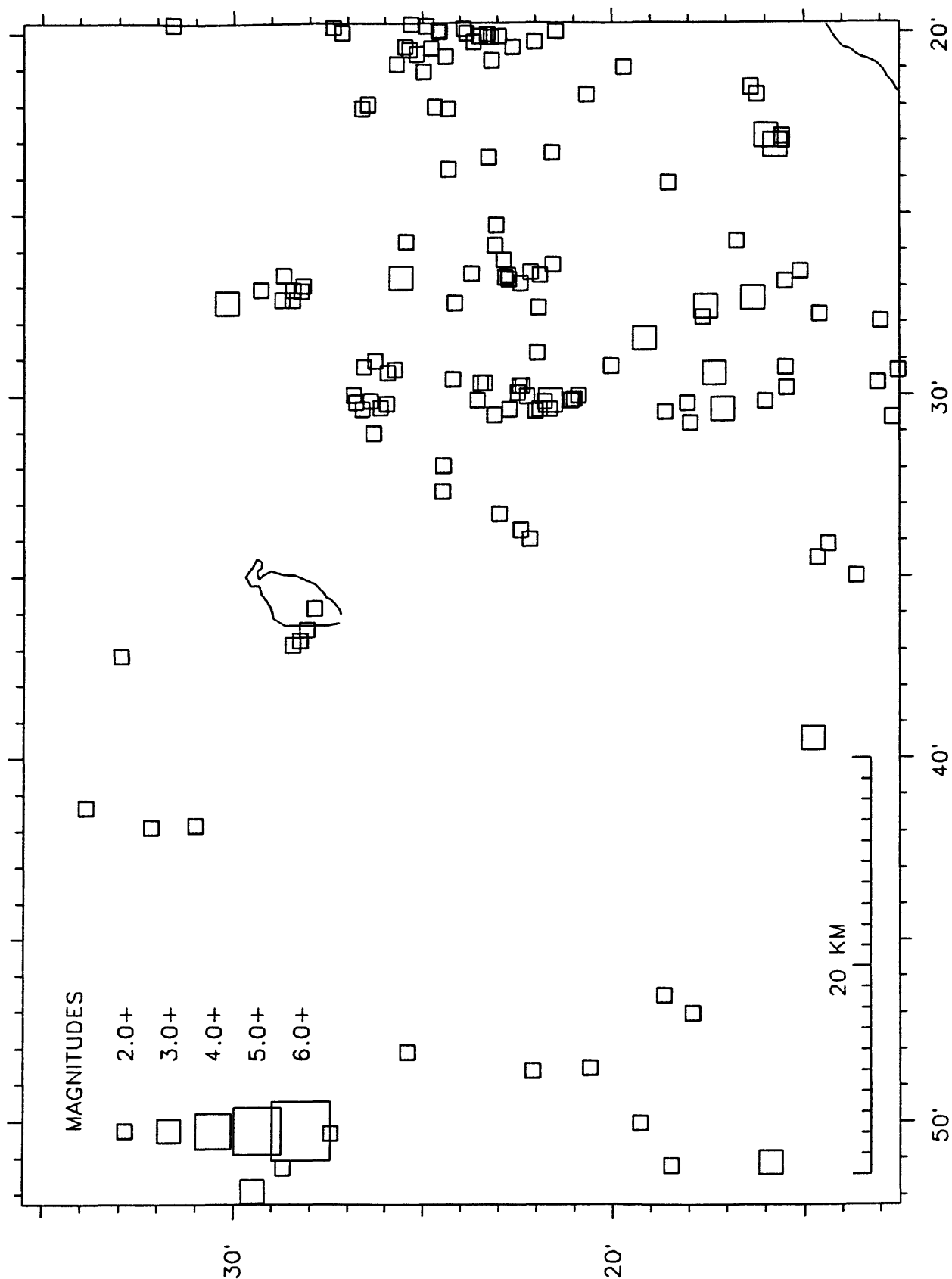


Figure 21. 1989 Earthquake locations, Mauna Loa summit, deep (13.1–60.0 km deep),  $M \geq 2.0$ .

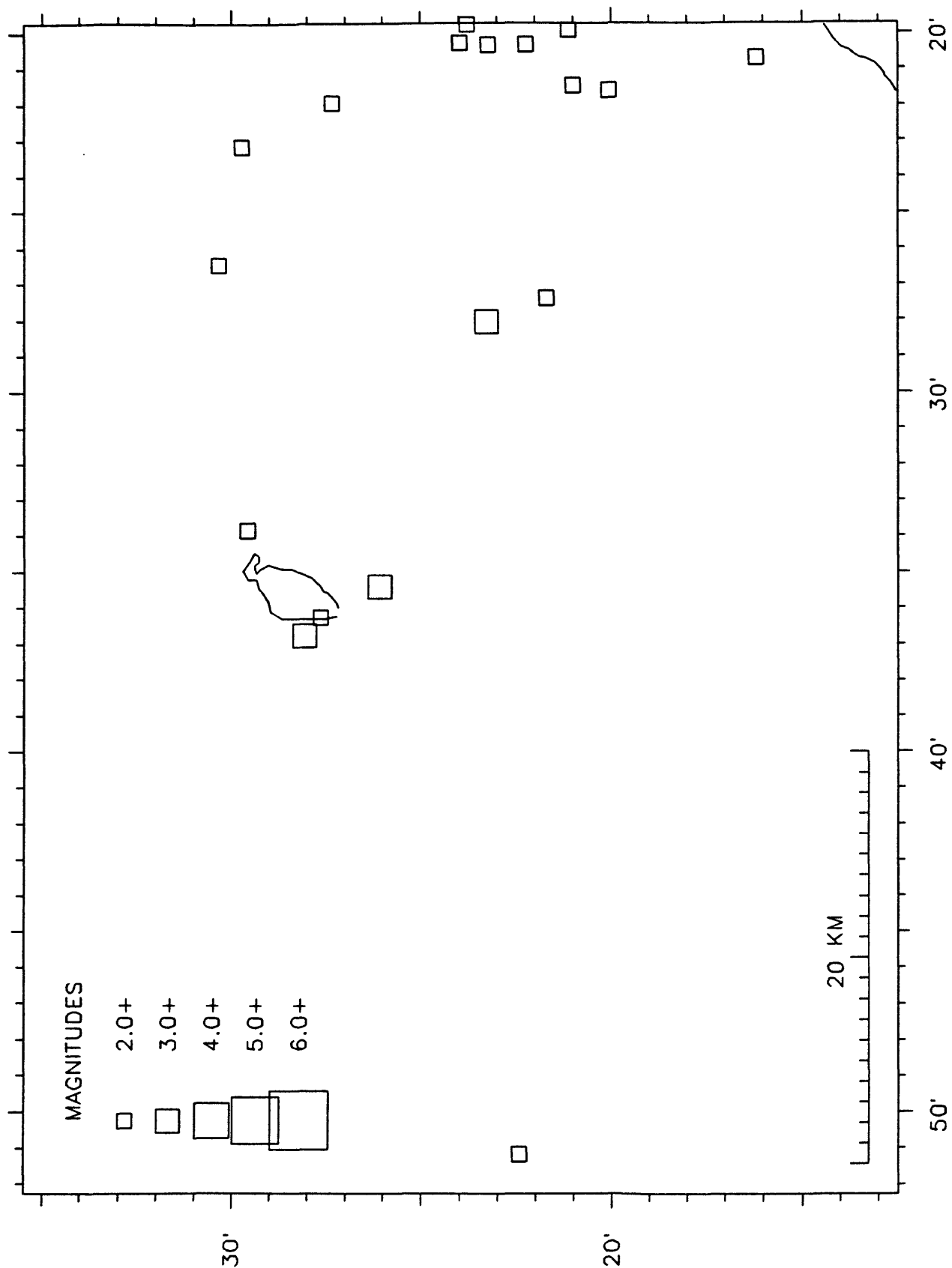


Figure 22. 1989 Earthquake locations, Hawaii Island,  
0-60 km deep,  $M \geq 3.0$ .

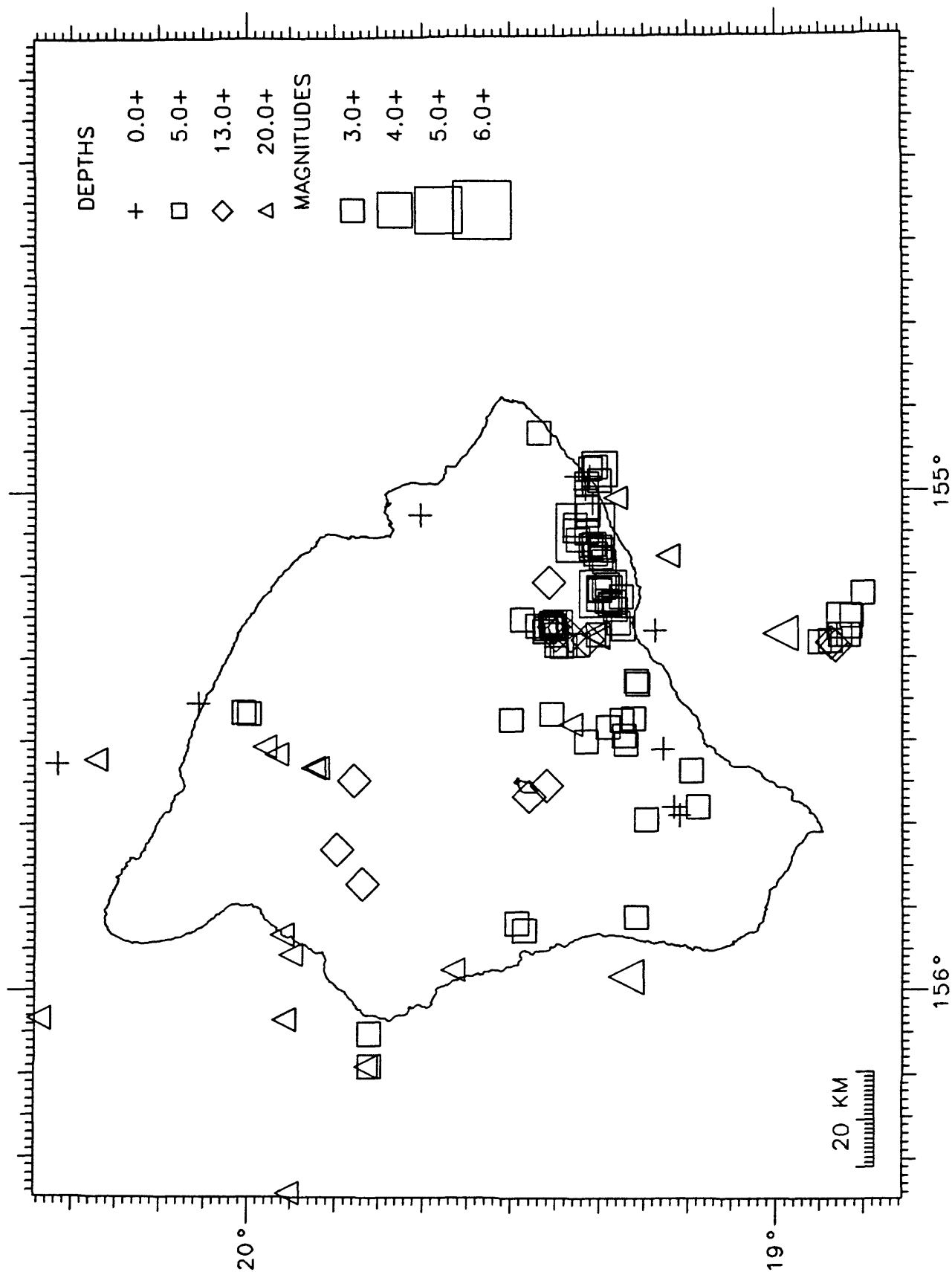


Table 5 is a chronological listing of all events successfully located during 1989. For each event the following data are presented:

ORIGIN TIME - in Hawaiian Standard Time: date, hour (HR), minute (MN), and second (SEC).

EPICENTER - in degrees and minutes of north latitude (LAT N) and west longitude (LON W).

DEPTH - Depth of focus in kilometers.

AMP MAG - Amplitude magnitude, if determined.

DUR MAG - Duration magnitude, if determined.

CD MAG - CUSP determined coda-amplitude magnitude.

NR - Number of arrivals (P or S) used for solution.

NS - Number of S arrivals used for solution.

GAP DEG - Largest azimuthal separation in degrees between stations.

RMS SEC - Root mean square error of time residuals, in seconds.

$$RMS = (\sum R_i^2 / NR)^{1/2}$$

MIN DIS - Epicentral distance, in kilometers, to the third nearest station.

ERH km - Standard error of the epicenter, in kilometers.

ERZ km - Standard error of depth of focus, in kilometers.

REMK - Remarks, three-letter code for geographic location of events. See Figures 5-8 for location of mnemonic code. Additional one-letter codes have the following meanings:

F - felt

L - long-period character

T - associated with harmonic tremor

B - quarry or other blast

\* - the location program had a convergence problem, which usually means that the depth may be unreliable.

Table 6 is a list of events of magnitude 3.0 or greater, selected from Table 5.

Table 5.

1989 HVO EARTHQUAKE SUMMARY LIST																											1989 HVO EARTHQUAKE SUMMARY LIST																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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## 1989 HVO EARTHQUAKE SUMMARY LIST

[illegible]

## 1989 HVO EARTHQUAKE SUMMARY LIST

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ORIGIN TIME				LAT N		LON W		DEPTH		AMP		DUR		CD		GAP		RMS		MIN		ERH		ERZ		NO		
YEAR	MON	DA	HRMN	SEC	DEG	MIN	DEG	MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	FM	RMK									
1989	FEB	3	937	59.25	19	22.41	155	26.90	10.43	2.0	2.0	1.7	35	1	38	11	1	0.4	0.6	26	KAO							
		3	1921	0.41	19	19.98	155	8.00	9.41	3.5	3.7	3.8	48	2	88	11	5	0.4	0.4	50	SF4							
		3	2154	5.14	19	23.62	155	27.38	9.91	2.0	1.9	1.8	47	5	30	12	2	0.3	0.6	42	KAO							
		3	23	52.79	19	25.34	155	29.82	9.90	1.9	1.5	1.6	34	4	37	09	6	0.4	0.7	31	KAO							
		4	152	28.75	19	10.09	154	46.68	31.51	1.6	1.7	1.9	2	295	08	34	2.8	2.9	16	DIS								
		4	1328	48.15	19	22.30	155	29.78	10.25	2.0	1.8	1.7	37	2	44	12	4	0.4	0.6	27	KAO							
		4	1739	22.71	19	12.97	155	2.83	43.89	2.7	2.8	2.5	48	5	215	11	12	1.2	1.2	45	DEP							
		5	10	1	47.36	19	15.40	155	26.16	10.10			1.0	14	2	79	07	4	0.5	1.3	8	LSW						
		5	1534	29.21	19	8.27	155	36.23	2.61	1.4	1.1	1.7	2	120	16	12	0.8	2.8	2	LSW								
		5	18	3	7.77	19	36.79	155	41.29	7.47	2.0	1.6	1.4	17	0	144	11	14	1.1	3.0	9	KEA						
		5	2044	56.73	19	11.88	155	27.17	5.91	1.8	1.4	1.7	26	0	128	13	5	0.6	1.9	16	LSW							
		5	2158	18.51	19	29.66	155	26.86	6.19	1.8	1.6	1.3	34	7	89	12	5	0.3	0.8	29	KAO							
5	2225	57.86	19	10.08	155	35.80	7.77	2.6	2.3	2.2	39	6	106	18	9	0.4	0.9	36	LSW									
6	451	24.81	19	30.35	155	26.47	23.96	2.4	2.0	1.9	45	6	77	10	4	0.4	0.5	42	DML									
6	5	3.63	19	26.89	155	18.40	7.53	1.1	1.3	1.3	19	5	132	14	3	0.6	0.8	14	INT L									
6	1210	10.26	19	18.39	155	13.16	6.84	1.8	1.7	1.7	34	2	91	11	3	0.4	0.9	26	SF2									
6	1342	20.12	19	19.29	155	13.21	9.28	2.9	3.2	3.2	46	4	124	13	6	0.4	0.5	42	SF2									
6	14	0	2.62	19	18.28	155	13.22	7.98	1.8	1.5	1.7	30	2	91	08	2	0.4	0.6	19	SF2								
6	14	8	48.91	19	18.25	155	13.39	5.82	1.4	1.3	1.4	25	1	85	09	2	0.4	1.0	19	SF2								
6	1831	35.10	19	20.42	155	11.85	8.40	2.8	2.9	3.0	48	5	76	14	5	0.4	0.6	38	SF3									
6	1939	3.02	19	19.61	155	8.36	7.57	1.6	1.2	1.4	23	2	84	08	4	0.5	0.9	15	SF4									
7	1216	40.84	19	25.34	155	20.03	4.22	1.9	1.5	1.4	27	3	67	13	3	0.4	0.9	25	KAO									
8	1156	30.10	19	55.23	155	20.77	10.06	1.6	1.6	1.7	25	6	271	10	3	1.1	0.4	20	KEA									
8	14	2	34.04	18	55.40	155	29.13	39.84	1.7	1.3	24	0	270	09	26	4.3	3.3	21	DIS									
8	1548	0.49	19	21.29	155	19.25	10.07	1.9	1.5	1.3	15	3	155	27	4	1.5	2.7	2	SWR L									
8	1614	32.50	19	26.18	155	13.88	5.42	1.6	1.3	1.3	13	0	214	08	3	1.1	0.9	1	GIN L									
8	1717	9.67	19	16.14	155	28.55	8.23	1.3	1.2	24	2	62	13	3	0.4	0.9	10	LSW										
9	120	3.84	19	20.12	155	11.98	8.81	1.8	1.6	1.6	49	7	79	13	5	0.4	0.3	46	SF3									
10	2024	18.55	19	26.42	155	29.04	10.08	1.6	1.3	1.2	38	7	43	17	7	0.4	0.7	30	KAO									
10	2124	31.77	19	21.30	155	2.66	6.84	0.8	1.2	1.5	33	3	138	14	3	0.6	0.7	32	SF5									
11	212	49.42	19	24.51	155	19.01	15.21	2.1	1.3	1.4	16	3	83	10	2	1.0	0.9	16	DEP L									
11	533	23.71	19	25.52	155	19.90	5.59	2.0	1.5	1.4	34	11	56	12	3	0.3	0.6	24	KAO									
11	624	47.63	19	22.23	155	2.14	9.77	1.1	1.3	1.5	32	4	144	11	5	0.6	0.4	29	SF5									
11	1241	16.79	19	24.13	155	15.96	3.06	1.5	1.1	1.2	20	5	80	08	1	0.3	0.2	16	SEC									
11	1744	42.84	19	47.22	155	49.02	17.37	2.6	2.7	2.3	31	5	173	12	11	0.7	1.4	36	HUA									
11	2222	54.81	19	26.06	155	14.49	8.66	1.8	1.4	1.4	15	1	209	12	3	1.2	1.0	16	INT L									
11	2312	27.66	19	53.04	155	33.51	20.54	2.3	2.0	2.1	45	3	128	12	11	0.6	1.3	42	KEA									
12	057	3.58	19	19.76	155	7.47	7.31	0.9	1.4	1.5	39	6	103	12	5	0.4	0.5	36	SF4									
12	1035	14.93	19	22.06	155	1.91	8.56	2.1	1.8	1.9	36	5	151	12	4	0.6	0.4	38	SF5									
12	11	8	11.62	19	25.89	155	29.19	9.94	1.9	1.2	1.4	32	2	41	10	7	0.4	0.7	31	KAO								

## 1989 HVO EARTHQUAKE SUMMARY LIST

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ORIGIN TIME				LAT N		LON W		DEPTH		AMP		DUR		CD		GAP				RMS		MIN		ERH		ERZ		NO		
YEAR	MON	DA	HRMN	SEC	DEG	MIN	DEG	MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	FM	RMK											
1989	FEB	14	7	4	40.74	19	24.68	155	16.34	14.05	2.1	1.7	1.9	54	11	69	12	1	0.5	0.2	43	DEP								
			14	2240	55.51	19	18.31	155	14.41	5.46	1.4	1.2	1.3	26	4	91	11	3	0.4	1.1	21	SF2								
			15	4	1.93	19	58.70	155	28.26	35.02	2.3	1.9	1.8	50	7	187	12	17	0.7	0.6	45	KEA								
			15	4	31.95	20	3.08	155	20.44	8.90	2.5	2.4	2.4	44	4	218	11	18	0.5	0.8	43	KEA								
			15	746	16.67	19	21.94	155	2.29	7.97	1.9	1.4	1.6	43	5	143	13	4	0.6	0.4	39	SF5								
			15	1924	18.08	19	20.60	155	48.53	11.93	2.6	2.1	1.9	44	6	138	13	11	0.5	0.3	40	KON								
			15	1941	12.85	19	18.93	155	13.71	9.83	3.3	3.4	3.5	60	13	67	12	4	0.3	0.2	51	SF2								
			15	2256	9.92	19	21.83	155	2.61	8.78	2.2	2.0	2.1	49	7	135	11	4	0.5	0.4	44	SF5								
			16	021	32.75	19	18.96	155	13.62	8.36	1.8	1.7	1.6	37	4	70	11	4	0.3	0.4	35	SF2								
			16	1015	1.58	19	29.00	155	26.21	5.19	2.1	1.4	1.5	40	9	74	14	5	0.3	1.0	33	KAO								
			16	1814	7.57	19	23.92	155	15.90	3.05	1.9	1.5	1.4	27	9	62	11	1	0.3	0.3	18	SEC								
			17	6	37.70	19	22.64	155	18.48	8.03	2.1	3.1	2.0	31	7	54	19	3	0.6	0.5	24	DEP								
			17	623	46.33	19	17.07	155	26.88	10.28	1.8	1.6	36	2	53	11	7	0.3	0.6	36	LSW									
			17	838	18.17	19	23.90	155	16.57	10.28	1.7	1.2	1.2	18	4	70	13	1	1.0	0.8	14	INT								
			17	846	5.18	19	17.95	155	13.14	7.71	1.8	1.5	1.7	46	7	103	12	2	0.4	0.4	40	SF2								
			17	1440	43.84	19	19.83	155	6.90	8.27	1.9	1.7	1.8	40	6	114	11	5	0.4	0.5	35	SF4								
17	1945	43.56	19	25.28	155	15.88	14.04	1.7	1.3	1.4	36	4	82	09	2	0.5	0.6	32	DEP											
17	2023	47.31	19	20.75	155	18.87	29.16	2.4	2.1	2.1	54	7	49	10	3	0.6	0.5	47	DEP											
18	338	1.51	19	17.29	155	28.02	9.96	1.8	1.7	1.6	35	5	50	12	5	0.3	0.5	32	LSW											
18	529	50.06	19	22.96	155	33.27	5.91	2.5	2.6	1.9	26	1	46	12	4	0.4	1.4	27	MLO											
18	1224	8.49	19	24.74	155	17.54	9.76	2.6	3.1	1.8	19	4	77	12	1	0.9	0.6	11	INT											
18	13	5	12.25	19	23.63	155	20.25	7.07	2.4	2.6	1.4	16	4	212	11	6	0.8	1.4	9	KAO										
18	1823	53.76	19	25.71	155	53.41	17.41	2.2	1.5	1.6	20	3	164	16	7	1.4	2.2	18	KON											
18	19	3	55.02	19	25.25	155	20.03	4.63	2.1	1.6	1.4	29	7	52	13	3	0.3	0.9	23	KAO										
19	351	44.80	19	24.91	155	17.36	6.86	1.8	2.0	1.5	18	2	79	09	1	0.5	0.7	18	INT											
19	752	18.82	19	27.72	155	28.25	9.41	1.7	1.6	1.7	37	4	50	11	7	0.3	0.6	21	KAO											
19	1223	53.27	19	22.94	155	17.58	3.78	2.4	3.0	1.6	13	0	80	09	1	0.4	0.6	1	SSC											
19	1239	30.47	19	24.15	155	18.32	6.60	2.1	2.1	1.4	23	4	55	12	3	0.5	0.6	21	INT											
19	2210	10.25	19	24.78	155	18.14	9.66	2.0	2.1	1.4	14	2	86	14	1	0.9	1.3	9	INT											
20	228	42.56	19	24.61	155	17.12	9.84	2.6	3.0	1.7	22	7	66	18	1	1.1	0.9	15	INT											
20	258	20.98	19	21.51	155	18.86	9.56	2.0	1.9	1.4	16	6	278	11	5	1.0	1.2	9	SWR											
20	4	15.89	19	20.54	155	2.33	6.44	2.0	2.0	2.0	44	5	166	15	2	0.6	0.7	40	SF5											
20	735	46.75	19	18.89	155	13.48	6.18					2.0	46	4	73	14	3	0.3	0.6	42	SF2									
20	735	48.66	19	18.34	155	13.30	4.58	2.2	2.4	2.2	52	7	187	15	2	0.4	1.0	47	SSF											
20	910	27.39	19	26.33	155	15.50	11.76	2.0	2.2	1.5	16	3	183	12	3	1.2	0.7	0	INT											
20	10	3	25.31	19	21.44	155	2.20	5.51	1.7	1.3	1.6	28	4	152	14	3	0.5	1.0	25	SF5										
20	1358	5.61	19	24.18	155	17.15	1.58	1.7	1.6	1.2	21	5	68	15	1	0.4	0.3	16	SSC											
20	1822	21.70	19	20.32	155	17.92	32.17	2.8	3.0	2.9	61	14	68	12	1	0.6	0.4	47	DEP											
20	1926	23.81	19	25.12	155	14.58	16.86	2.8	3.1	1.5	19	3	186	12	1	1.5	0.7	17	DEP											
20	1959	13.78	19	23.62	155	17.80	11.27	2.3	2.4	1.5	17	2	64	12	2	0.8	0.8	19	INT											

ORIGIN TIME		LAT N		LON W		DEPTH ANP DUR CD		GAP RMS MIN ERH		ERZ NO								
YEAR	MON	DA	HRMN	SEC	DEG MIN	DEG MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	KM	FM	RMK
1989 FEB 26 4 7 14.73 19 24.67 155 15.79 14.55 2.2 1.4 1.5 18 3 104 .12 2 1.2 0.6 15 DEP L																		
26 1145 44.57 19 26.40 155 30.13 10.39 2.9 2.9 3.1 55 10 34 .11 8 0.3 0.4 42 KAO																		
26 1231 29.18 19 24.15 155 27.44 6.57 2.1 2.0 1.9 52 8 45 .12 3 0.3 0.5 45 KAO																		
26 15 0 14.36 19 23.29 155 28.04 27.63 3.1 3.4 1.9 12 2 285 .04 2 1.7 1.1 0 DML L																		
26 15 7 56.13 19 25.84 155 16.30 12.26 1.8 1.6 1.4 19 3 132 .13 2 1.0 1.6 3 INT L																		
26 1551 51.99 19 24.76 155 18.11 11.84 1.9 1.6 1.3 13 4 179 .13 1 3.5 0.9 1 INT L																		
26 1651 43.78 19 22.99 155 33.27 6.74 1.7 1.5 1.3 14 1 70 .11 4 0.5 1.6 11 MLO																		
26 2023 9.43 19 29.02 156 7.69 39.98 1.9 1.8 36 2 271 .11 22 1.7 1.1 30 KON																		
26 2238 23.18 19 21.32 155 6.32 7.78 1.9 1.9 1.8 40 4 89 .12 4 0.4 0.7 34 SF4																		
26 2356 14.30 19 16.04 155 22.52 9.69 1.6 1.2 1.0 24 3 156 .10 4 0.5 0.7 22 SWR																		
27 343 57.63 19 24.74 155 20.30 12.62 2.0 1.9 1.4 16 3 101 .20 2 1.5 1.2 13 KAO L																		
27 350 50.41 19 25.53 155 15.67 13.04 1.9 1.6 1.2 20 4 145 .13 3 0.9 0.9 17 DEP L																		
27 856 53.69 19 21.29 155 11.20 9.60 3.0 3.2 3.3 56 10 102 .11 6 0.3 0.3 51 SF3 F																		
27 1227 5.68 19 19.44 155 17.83 15.87 2.8 3.3 1.6 18 5 136 .25 3 1.6 1.6 1 DEP L																		
27 2045 51.31 19 25.83 155 16.87 11.32 2.6 3.1 1.1 12 2 126 .11 2 1.2 1.6 1 INT L																		
27 2352 21.59 19 23.85 155 15.71 0.15 1.5 1.3 15 3 130 .11 2 0.2 0.4 14 SEC L																		
27 2352 38.60 19 23.11 155 14.75 5.98 2.7 3.1 1.9 17 3 202 .14 2 0.7 1.0 17 INT L																		
28 3 45.12 19 25.03 155 15.80 7.43 1.8 1.8 1.2 17 4 120 .11 2 0.8 0.5 16 INT L																		
28 941 51.90 19 24.71 155 15.84 11.80 2.0 2.0 1.5 17 3 105 .14 2 1.1 0.6 15 INT L																		
28 1128 24.35 19 22.02 155 20.86 8.72 1.6 1.7 1.2 12 3 157 .18 4 1.2 2.9 1 KAO L																		
28 1353 52.38 19 14.66 155 34.50 8.46 2.3 2.2 2.1 34 3 108 .17 5 0.6 0.9 25 LSW																		
28 1356 27.65 19 45.28 155 3.04 0.00 2.3 2.3 12 1 287 .28 28 7.3 2.0 16 HIL B																		
28 1528 0.67 19 25.31 155 19.19 4.27 2.6 3.0 1.6 15 3 131 .09 2 0.6 0.6 1 KAO L																		
28 1640 26.90 19 23.75 155 19.19 11.01 2.0 1.8 1.2 11 2 152 .11 1 1.4 1.1 1 INT L																		
28 1645 25.13 19 55.52 156 41.82 43.86 2.2 2.1 12 0 335 .13 95 15.8 4.9 8 DIS *																		
28 1738 7.85 19 11.38 155 39.76 10.39 2.4 2.4 2.2 1 35 3 111 .17 8 0.5 0.8 15 LSW																		
28 18 4 36.83 19 21.31 155 30.03 11.05 2.0 1.6 1.7 35 1 45 .11 5 0.4 0.7 25 KAO																		
28 22 8 39.47 19 25.13 155 15.56 11.30 2.7 3.1 1.6 19 3 132 .18 2 1.3 0.7 17 INT L																		
MAR 1 315 16.79 19 24.50 155 16.85 10.05 2.2 2.6 1.1 15 4 83 .10 1 0.9 0.5 16 INT L																		
1 454 7.04 19 26.27 155 15.26 10.68 1.9 1.7 1.2 22 8 191 .15 3 1.0 0.7 15 INT L																		
1 619 57.37 19 25.69 155 16.05 13.25 1.9 1.3 21 6 136 .17 2 1.3 0.6 16 DEP L																		
1 620 8.15 19 25.74 155 16.77 7.38 2.5 2.9 1.7 19 4 112 .17 2 0.9 0.6 15 INT L																		
1 848 50.43 19 25.05 155 15.34 6.24 1.8 1.8 1.2 17 3 135 .12 2 0.8 0.7 16 INT L																		
1 910 38.78 20 0.99 155 22.28 8.33 2.5 2.0 2.0 41 3 207 .09 14 0.8 0.6 41 KEA																		
1 1058 34.91 19 21.77 155 30.15 10.13 2.4 2.3 47 8 406 .11 5 0.3 0.5 43 KAO																		
1 1134 29.85 19 23.84 155 16.42 14.57 2.8 3.0 1.3 18 4 70 .10 0 1.1 0.7 16 DEP L																		
1 1215 30.29 19 58.01 155 35.00 13.31 2.4 1.5 1.7 26 4 156 .11 14 0.6 0.4 23 KOH																		
1 1450 26.70 19 17.62 155 13.42 7.30 1.8 1.4 1.5 37 6 93 .11 1 0.4 0.6 32 SF2																		
1 1919 55.62 19 25.00 155 16.64 6.03 2.6 3.0 1.1 8 0 98 .09 1 1.0 1.6 0 INT L																		
2 345 59.88 19 22.43 155 13.99 3.27 1.5 1.3 1.5 23 7 85 .08 2 0.4 0.3 16 SEC L																		
2 516 53.98 19 23.36 155 17.36 13.83 2.9 3.4 1.9 19 4 60 .17 1 1.0 0.9 17 DEP L																		
2 523 12.15 19 23.07 155 14.49 3.52 1.6 1.1 1.4 20 6 97 .10 3 0.3 0.3 14 SEC																		
2 819 43.47 19 10.95 155 38.93 4.43 2.9 3.2 2.7 43 5 107 .17 8 0.6 1.9 38 LSW																		
2 1343 19.66 19 24.19 155 15.84 2.24 1.9 1.5 1.8 8 2 128 .04 1 0.4 0.8 14 INT L																		
2 1352 33.07 19 23.09 155 17.15 7.88 2.4 2.7 1.7 21 7 65 .11 1 0.6 0.8 14 INT L																		

ORIGIN TIME		LAT N		LON W		DEPTH AMP DUR CD		GAP RMS MIN ERH		ERZ NO									
YEAR	MON	DA	HR	MM	SEC	DEG	MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	FM	RMK	
1989 MAR																			
8	320	19.79	19	30.51	155	27.02	5.04	2.4	2.3	1.8	45	11	59	.13	3	0.3	0.8	37 MLO	
8	1131	57.05	19	24.63	155	17.23	11.87	2.6	2.9	1.8	16	2	66	.12	1	1.0	0.8	15 INT L	
3	149	21.41	19	24.96	155	15.26	0.41	1.9	2.1	1.7	14	2	164	.21	2	0.7	0.8	12 SNT L	
3	544	13.15	19	26.42	155	14.30	7.93	2.6	2.9	1.7	16	4	221	.13	3	1.0	0.6	12 INT L	
3	1243	20.88	19	23.92	155	19.26	10.74	2.2	2.4	1.6	15	3	80	.14	4	0.9	1.2	15 KAO L	
3	2117	31.01	19	25.78	155	13.63	6.39	2.6	3.0	1.9	17	4	226	.17	2	0.9	1.3	14 SF2 L	
4	136	38.64	19	24.30	155	16.04	12.96	2.0	1.2	1.2	16	3	100	.11	2	1.0	0.7	13 INT L	
4	136	52.86	19	24.11	155	16.67	7.47	2.6	3.0	1.9	17	3	75	.17	2	0.8	0.7	14 INT L	
4	240	52.00	19	55.37	156	24.35	32.17	3.2	3.5	2.9	50	5	287	.14	65	1.4	2.5	47 DTS	
4	440	53.52	19	18.13	155	20.54	8.11	1.2	1.3	2.5	5	120	.13	3	0.4	0.7	21 SWR		
4	957	21.30	19	20.15	155	12.27	8.69	1.9	2.1	2.1	47	8	76	.14	5	0.4	0.5	39 SF3	
4	1124	11.75	19	12.65	155	28.99	9.72	1.4	1.4	2.4	2	118	.12	5	0.6	1.0	22 LSW		
4	1345	45.78	19	24.67	155	16.13	6.61	2.4	3.0	1.8	16	2	98	.11	2	0.7	0.6	15 INT L	
4	1349	22.98	19	23.78	155	15.38	0.83	1.6	1.7	1.3	11	2	153	.14	2	0.3	0.6	10 SEC L	
4	18	9	28.03	19	25.22	155	19.20	5.97	2.1	1.9	1.5	25	5	44	.11	3	0.4	0.7	19 KAO L
4	1817	47.43	21	37.24	160	10.47	6.44	4.8	32	10	349	.18497	11.6	15.7	22	DIS	*		
4	2133	25.84	19	24.82	155	15.77	4.00	2.0	2.3	1.3	17	3	111	.20	2	0.8	0.6	14 SMC L	
4	2220	25.71	20	10.43	155	31.72	16.21	1.5	1.8	1.7	3	248	.12	27	3.1	14.1	9	KMA *	
5	1	34	10	20	123.97	155	20.27	16.10	2.0	2.0	1.3	10	1	136	.09	1	1.5	1.7	0 DNL
5	332	54.44	19	27.77	155	16.67	14.23	2.1	2.0	1.0	8	1	205	.09	0	1.7	1.0	2 DEP L	
5	352	52.63	19	23.75	155	15.37	3.38	1.0	1.1	1.1	20	7	84	.14	3	0.3	0.5	13 SEC	
5	519	42.87	19	29.82	155	29.44	4.41	2.6	2.3	2.0	57	13	41	.14	5	0.3	1.4	48 KAO	
5	615	1.09	19	21.55	155	5.81	7.43	1.7	1.9	1.8	46	6	84	.15	5	0.4	0.3	44 SF5	
5	7	17.33	19	21.49	155	11.63	10.25	2.8	3.0	1.4	8	1	194	.02	3	1.4	1.0	0 SF3 L	
5	716	12.78	19	24.49	155	13.28	11.05	2.5	2.3	1.3	9	2	274	.11	2	2.0	1.4	0 SF2 L	
5	1056																		

## 1989 HVO EARTHQUAKE SUMMARY LIST

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YEAR	MON	DA	HRMN	SEC	LAT N	DEG MIN	LONG W	DEPTH KM	AMP DUR	CD	MAG	MAG	NR	NS	DEG	SEC	DIS	RM	RMS	MIN	ERH	ERZ	NO
ORIGIN TIME																							
1989	MAR	14	039	54.81	18	59.60	155 28.59	40.57	2.2	1.9	1.7	30	7	228	.11	20	1.0	1.1	23	DLS			
14	653	37.11	19	22.84	155	2.31	7.24	1.5	1.4	1.7	38	6	126	.16	4	0.5	0.6	35	SF5				
14	1026	55.44	19	24.25	155	18.60	11.22	2.7	3.1	1.8	16	2	64	.10	2	0.7	1.0	15	INT L				
14	1035	26.75	19	24.79	155	15.99	8.87	2.2				2	405	.14	2	0.9	0.6	17	INT L				
14	1653	3.93	19	26.25	155	16.83	11.95	2.8	3.0	1.7	15	3	118	.11	2	1.2	0.8	2	INT L				
14	17	5	10.14	19	33.04	155	6.41	25.33	2.9	2.6	2.6	54	11	128	.10	7	0.5	1.0	39	HIL F			
14	1856	10.35	19	27.89	155	35.82	12.42	2.1	1.2	32	8	68	.16	1	0.4	0.5	25	MLO T					
14	1856	50.70	19	27.64	155	36.26	16.36	2.5	1.2	21	4	159	.17	1	1.1	0.7	19	DML T					
14	22	0	15.50	19	27.05	155	17.17	5.98	1.6	1.7	1.3	18	7	112	.17	2	0.9	0.9	6	INT L			
14	2356	10.80	19	16.32	155	27.32	9.30	2.7	3.3	2.9	51	8	129	.14	5	0.4	0.6	45	LSW				
15	4	0	30.13	19	22.40	155	19.24	9.63	2.8	3.1	2.0	25	3	63	.15	3	0.6	0.9	22	KAO L			
15	815	32.66	19	26.12	155	15.32	6.78	1.6	1.5	1.0	19	4	183	.13	3	1.0	0.7	15	INT L				
15	955	6.44	19	20.04	155	11.91	8.91	2.9	3.1	3.1	54	10	81	.12	5	0.4	0.3	48	SF3				
15	1057	23.55	19	26.02	155	18.85	8.10	2.0	2.0	1.5	10	2	146	.10	2	1.9	1.3	0	INT L				
15	1358	10.99	19	27.27	155	15.51	8.57	1.8	1.6	1.2	11	1	218	.12	2	1.3	1.4	1	INT L				
15	17	8	20.62	19	25.64	155	15.59	8.16	2.6	3.0	1.8	20	2	148	.09	3	0.8	0.6	19	INT L			
15	1937	18.87	19	24.14	155	27.99	6.90	1.8	1.5	1.5	36	2	37	.11	3	0.3	0.6	23	KAO				
15	2348	45.26	19	25.39	155	16.32	10.78	2.7	3.3	1.8	19	3	118	.10	2	0.9	0.6	17	INT L				
16	4	59.88	19	24.06	155	51.13	10.56	3.1	3.1	2.9	53	7	128	.13	2	0.6	0.4	46	KON				
16	7	46.87	19	24.56	155	16.43	9.10	2.1	2.8	1.4	17	2	90	.21	1	1.1	0.9	15	INT L				
16	849	29.56	19	19.57	155	9.93	7.50	1.2	1.7	1.6	44	8	93	.13	5	0.4	0.5	38	SF3				
16	1411	14.88	19	25.09	155	16.25	8.55	1.5	1.4	1.1	9	0	137	.10	2	0.9	2.4	0	INT L				
16	1547	40.99	19	27.20	155	15.94	11.66	2.6	2.8	1.2	13	3	232	.13	4	1.7	0.9	1	INT L				
16	1947	12.62	19	24.06	155	15.76	2.10	1.3	1.4	1.1	14	5	117	.09	1	0.3	0.6	8	SEC				
16	2133	54.65	19	25.27	155	16.61	8.47	1.4	1.4	1.0	18	2	106	.11	1	0.6	1.0	16	INT L				
16	22	7	9.79	19	25.21	155	16.33	11.88	2.7	3.1	1.9	17	3	112	.14	1	1.1	0.6	16	INT L			
16	2211	50.65	19	28.98	155	27.18	7.95	1.9	1.3	48	13	41	.14	6	0.3	0.9	38	KAO					
17	0	3	0.52	19	21.10	155	30.13	10.07	2.3	2.0	2.0	27	0	48	.12	5	0.4	0.9	29	KAO			
17	953	12.14	19	20.12	155	7.77	7.64	1.6	1.7	1.8	38	3	92	.10	5	0.5	0.6	24	SF4				
17	1213	39.54	19	28.71	155	14.21	1.07	1.9	1.9	1.3	8	2	303	.07	5	1.0	0.7	0	GLN L*				
17	1445	58.34	19	22.91	155	15.12	10.96	2.8	2.7	1.3	15	3	192	.11	2	1.5	0.9	2	INT L				
17	2134	34.65	19	24.08	155	16.41	11.17	2.5	2.6	1.2	18	2	75	.14	0	1.0	0.9	16	INT L				
18	4	22.21	19	24.93	155	16.80	12.19	2.6	3.1	1.9	19	4	147	.13	0	1.1	0.6	17	INT L				
18	414	42.69	19	24.72	155	16.65	4.12	1.5	2.1	1.3	14	0	91	.13	1	0.5	0.6	15	SNC L				
18	832	18.24	19	26.36	155	13.85	7.16	2.6	2.8	1.8	16	2	231	.15	3	1.1	0.9	15	GLN L				
18	1347	30.42	19	23.94	155	16.93	13.75	2.6	2.4	1.7	23	5	70	.14	1	1.0	0.7	18	DEP L				
18	1730	22.48	19	22.01	155	18.05	6.93	2.2	2.3	1.1	16	3	168	.14	3	0.8	1.5	15	SWR L				
18	1850	7.84	19	17.84	155	27.83	9.88	1.5	1.4	39	4	47	.16	7	0.4	0.6	36	LSW					
18	1859	54.07	19	19.83	155	10.28	8.01	1.8	2.1	31	0	89	.11	4	0.4	0.6	33	SF3					
18	2233	42.94	19	21.71	155	19.03	0.82	2.5	3.1	1.0	10	2	246	.23	4	1.3	0.9	2	SWR L				
18	2237	40.72	19	25.24	155	16.79	9.80	1.8	1.8	1.4	18	4	101	.15	1	0.8	0.9	2	INT L				
19	625	4.89	19	28.08	155	16.77	12.00	2.6	3.0	1.6	15	5	244	.06	1	1.3	0.6	3	GLN L				
19	1040	52.95	19	24.54	155	19.96	7.47	2.1	2.5	1.5	11	3	240	.12	2	2.4	2.0	1	KAO L				
19	14	6	57.30	19	15.57	155	22.96	6.35	2.3	2.8	2.1	37	4	153	.13	3	0.4	0.9	33	SWR			
19	1412	48.72	19	15.57	155	22.85	6.70	2.3	2.9	2.2	40	3	153	.14	3	0.4	0.9	35	SWR				

## 1989 HVO EARTHQUAKE SUMMARY LIST

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ORIGIN TIME			LAT N		LONG W		DEPTH AMP DUR			CD			GAP RMS MIN ERH			ERZ NO						
YEAR	MON	DA	HRMN	SEC	DEG MIN	DEG MIN	KM	MAG	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	KM	FM	RMK			
1989	MAR	19	1419	34.35	19	15.15	155	22.77	6.11	1.3	1.1	18	2	182	.09	3	0.5	1.4	14	SWR		
		19	1439	48.49	19	15.52	155	22.91	4.49	1.6	1.3	20	2	160	.09	3	0.5	1.6	14	SWR		
		19	1441	19.61	19	15.39	155	22.80	4.54	1.6	1.6	1.2	18	1	164	.09	3	0.6	1.5	14	SWR	
		19	1555	37.14	19	15.33	155	22.82	5.55	1.3	1.1	20	2	164	.10	3	0.5	1.5	17	SWR		
		19	18	8	47.28	19	23.88	155	18.26	9.02	2.5	3.2	1.8	17	3	66	.12	2	0.7	1.0	16	INT L
		19	1812	9.25	19	25.44	155	16.05	9.88	1.9	1.6	1.6	15	5	129	.10	2	1.3	0.7	10	INT L	
		19	1815	54.36	19	24.79	155	16.36	10.58	1.9	1.6	1.3	17	3	98	.10	1	1.0	0.6	15	INT L	
		19	1825	28.13	19	26.11	155	15.95	10.63	1.7	1.6	1.2	14	5	155	.08	3	1.1	0.8	1	INT L	
		19	1846	52.74	19	21.51	155	15.08	2.82	2.2	2.0	1.6	31	5	63	.11	2	0.3	0.3	20	KOA	
		19	2021	55.45	19	21.52	155	6.08	8.25	1.6	1.9	1.8	41	6	85	.11	4	0.5	0.4	25	SF4	
		19	2056	17.79	19	25.42	155	16.54	11.77	2.7	3.0	1.8	18	3	112	.12	1	1.1	0.5	16	INT L	
		19	21	8	53.54	19	55.32	155	51.08	21.55	2.8	2.7	2.4	37	2	264	.15	21	1.5	2.4	36	KOH
		20	1	4	9.76	19	23.19	155	12.95	5.83	1.7	1.5	1.3	9	4	296	.11	4	1.5	2.9	1	SF2 L
		20	428	18.28	19	24.70	155	15.69	7.57	2.4	2.6	1.2	13	1	106	.14	2	0.8	1.8	1	INT L	
		20	438	43.06	19	15.16	155	29.21	9.04	1.3	1.6	2.3	2	98	.10	2	0.4	0.7	11	LSW		
		20	1137	11.05	19	24.98	155	17.16	10.95	2.1	2.5	1.0	14	3	87	.06	0	0.9	1.1	0	INT L	
		20	1339	52.86	19	20.99	155	23.93	11.05	2.0	1.6	1.6	32	3	39	.10	2	0.4	0.6	22	SWR	
		20	1541	21.44	19	25.33	155	20.46	11.45	2.6	1.1	15	4	167	.17	5	1.6	1.0	2	KAO L		
		20	1548	50.30	19	21.12	155	13.01	8.89	2.2	2.3	2.2	38	3	69	.11	3	0.4	0.5	32	SF2	
		20	1815	55.54	19	20.31	155	17.19	8.37	2.8	3.2	1.3	11	3	267	.09	4	1.1	2.2	1	SWR L	
		20	2146	8.17	19	23.17	155	18.67	18.53	2.2	2.1	1.3	12	2	193	.16	2	3.3	2.2	1	DEP L	
		20	2147	13.53	19	21.65	155	30.36	9.88	2.5	2.7	2.4	56	9	46	.10	5	0.3	0.4	46	KAO	
		21	158	12.11	19	23.21	155	18.38	9.82	2.3	1.5	1.5	24	5	56	.14	4	0.6	0.8	20	INT L	
		21	250	40.04	19	22.11	155	2.43	7.62	2.0	1.4	1.8	45	6	129	.14	4	0.5	0.4	41	SF5	
		21	439	35.19	19	24.59	155	16.60	6.99	1.8	1.5	1.2	18	3	88	.14	1	0.8	0.5	16	INT L	
		21	819	26.15	19	24.47	155	17.27	8.38	2.5	3.0	1.8	18	2	55	.11	1	0.7	1.1	17	INT L	
		21	859	39.98	19	26.13	155	15.74	10.96	1.9	1.6	1.0	16	3	165	.10	3	1.2	0.7	14	INT L	
		21	1359	16.42	19	27.76	155	16.27	13.21	2.3	1.9	1.7	11	5	334	.17	5	4.7	1.1	2	DML L	
		21	1650	40.50	19	29.58	155	33.86	14.60	2.6	1.7	1.9	37	8	47	.09	3	0.3	0.3	24	DML	
		21	17	17.30	19	24.34	155	16.79	1.76	1.4	1.6	1.3	10	4	117	.17	2	0.8	0.8	1	SSC L	
		21	2132	35.67	19	25.23	155	15.37	5.02	2.4	3.0	1.8	17	2	144	.17	2	0.7	0.7	16	INT L	
		22	640	17.02	19	19.82	155	11.24	7.70	2.1	2.1	2.3	52	8	89	.12	5	0.4	0.4	46	SF3	
		22	733	25.83	19	24.84	155	16.27	8.71	2.7	3.0	1.9	17	2	101	.10	1	0.8	0.6	15	INT L	
		22	1155	33.22	19	18.00	155	15.85	10.37	3.0	3.0	3.0	53	8	140	.13	5	0.4	0.3	48	SF1	
		22	144	1.64	19	24.90	155	19.80	7.52	2.6	2.5	2.1	44	9	37	.11	2	0.3	0.5	29	KAO	
		22	1449	51.07	19	23.81	155	16.86	6.49	2.4	3.0	1.9	18	2	67	.16	0	0.7	0.9	16	INT L	
		22	17	9	3.86	19	25.41	155	19.37	7.46	1.9	1.2	1.2	27	6	75	.09	3	0.4	0.6	20	KAO
		22	1733	47.92	19	16.96	155	15.44	7.82	1.5	1.4	1.4	27	2	175	.11	3	0.6	0.8	15	SF1	
		22	1748	3.60	19	25.11	155	16.10	11.49	1.8	1.8	1.0	18	4	115	.11	2	1.0	0.6	13	INT L	
		22	2224	54.92	19	25.58	155	17.99	11.71	2.7	2.9	1.7	21	5	78	.20	1	1.2	0.7	16	INT L	
		23	743	28.75	19	24.60	155	16.00	9.23	2.7	2.7	1.8	18	3	98	.17	2	1.1	0.6	15	INT L	
		23	827	33.25	19	17.16	155	22.93	8.54	1.5	1.4	1.3	33	7	110	.11	6	0.4	0.7	25	SWR	
		23	851	24.26	19	21.52	155	1.08	5.75	2.4	2.5	2.3	50	9	170	.14	4	0.4	0.5	42	SF5	
		23	1233	1.96	19	24.23	155	17.38	14.16	2.8	3.1	1.9	26	10	58	.11	1	0.8	0.5	16	DEP L	
		23	1823	32.49	19	28.86	155	15.93	10.22	2.3	2.6	1.1	12	1	1.61	.12	2	2.2	0.2	1	GLN L	

## 1989 HVO EARTHQUAKE SUMMARY LIST

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YEAR	MON	DA	HRMN	SEC	ORIGIN TIME	LAT N	DEG MIN	LOW W	DEPTH RM	AMP MAG	DUR CD	GAP RMS	MIN ERH	DIS KM	ERZ NO	RM FM	RMK				
1989	MAR	23	2113	13.87	19	25.64	155 19.27	8.14	1.9	1.2	1.2	34	11	50	.12	3	0.3	0.5	24	KAO	
		24	057	29.21	19	24.55	155 17.07	10.20	2.6	2.7	1.8	20	4	77	.13	1	0.8	0.7	16	INT L	
		24	627	18.56	19	26.16	155 14.96	0.13	2.4	2.8	2.1	21	4	198	.13	3	0.3	0.6	17	SNCL	
		24	1013	54.66	19	25.81	155 19.56	6.85	2.4	1.2	1.5	25	3	84	.11	4	0.4	0.9	22	KAO	
		24	13	2	32.39	19	25.23	155 16.30	13.81	2.8	3.8	1.5	10	2	166	.06	1	1.7	2.5	0	DEP L
		24	23	1	56.47	19	25.62	155 17.25	8.46	2.6	3.0	1.9	16	5	94	.13	1	0.8	0.5	15	INT L
		25	150	31.27	19	25.63	155 12.53	13.88	1.4	1.6	1.1	12	4	286	.09	4	1.5	0.7	8	DEP L	
		25	625	0.69	19	25.77	155 15.22	10.70	2.7	3.2	2.0	18	6	176	.13	3	1.1	0.7	12	INT L	
		25	1427	11.37	19	23.62	155 15.49	12.62	2.5	2.6	1.8	14	4	85	.16	2	1.4	0.7	11	INT L	
		25	20	9	37.12	19	25.26	155 16.80	10.36	2.5	2.4	1.8	18	5	101	.10	1	0.7	0.6	13	INT L
		25	2025	31.43	19	23.88	155 17.44	9.93	2.7	2.8	1.8	20	8	83	.12	1	0.7	0.8	13	INT L	
		25	2229	8.92	19	26.13	155 18.32	6.05	2.4	2.9	1.9	21	8	163	.16	2	0.8	0.8	14	INT L	
		26	447	39.10	19	25.14	155 15.60	10.93	2.7	3.1	1.5	13	2	131	.10	2	1.2	1.7	0	INT L	
		26	1242	23.03	19	23.78	155 18.00	8.49	2.6	2.7	1.5	10	3	112	.13	2	0.9	1.6	0	INT L	
		26	1556	7.71	19	24.00	155 17.49	8.64	1.8	1.9	1.3	9	0	102	.08	1	1.2	2.2	0	INT L	
		26	1830	31.56	19	20.87	155 6.15	7.43	1.6	1.4	1.7	37	1	99	.12	5	0.5	0.6	21	SF4	
26	2016	18.24	19	20.44	155 4.04	6.71	1.7	1.6	1.6	22	1	114	.09	2	0.5	1.0	20	SF5			
26	2038	34.32	19	24.00	155 15.71	6.18	2.6	2.9	1.3	8	2	170	.04	2	1.1	1.6	2	INT L			
26	2159	56.42	19	25.33	155 15.76	9.86	1.8	1.7	1.1	17	6	134	.10	2	1.2	0.6	13	INT L			
26	2216	16.36	19	21.19	155 13.36	8.43	2.3	2.3	2.4	54	7	56	.13	3	0.3	0.3	51	SF2			
27	019	20.17	19	26.54	155 17.79	13.07	2.2	2.2	1.5	14	3	108	.13	2	1.5	0.9	10	DEP L			
27	620	24.64	19	28.02	155 16.70	9.53	2.5	2.9	1.8	23	10	214	.12	0	0.7	0.7	14	INT L			
27	1032	10.50	19	28.45	155 27.08	6.50	2.9	2.6	2.4	52	8	55	.14	7	0.3	0.9	35	KAO			
27	1219	57.04	19	26.61	155 16.07	7.14	2.6	3.1	1.2	12	1	165	.14	2	0.9	1.5	1	INT L			
27	1840	19.76	19	19.29	155 13.58	7.73	1.4	1.5	1.5	35	2	67	.13	4	0.5	0.9	25	SF2 L			
27	2019	34.24	19	25.44	155 16.42	11.83	2.7	2.9	1.5	17	5	116	.06	1	1.0	0.7	5	INT L			
28	1	8	48.50	19	25.26	155 16.60	12.00	2.1	2.4	1.2	21	5	106	.10	1	0.9	0.4	16	INT L		
28	5	5	0.18	19	25.46	155 17.33	15.27	2.0	1.6	1.2	19	4	91	.12	0	1.1	0.6	16	DEP L		
28	519	5.30	19	20.31	155 11.74	7.66	1.7	1.5	1.5	39	5	78	.13	5	0.4	0.5	34	SF3			
28	759	36.32	19	21.66	155 13.72	1.55	1.5	1.4	1.4	20	4	55	.05	2	0.4	0.5	16	SER			
28	856	32.05	19	24.48	155 17.75	7.31	2.5	2.9	1.8	17	2	56	.13	2	0.7	0.8	16	INT L			
28	9	6	15.23	19	24.07	155 16.74	11.53	2.0	2.2	1.4	16	2	91	.11	0	1.0	0.8	15	INT L		
28	951	24.39	19	20.20	155 11.11	8.73	1.8	1.9	1.9	49	8	82	.12	4	0.4	0.5	42	SF3			
28	1236	56.79	19	26.36	155 16.80	11.07	2.8	3.3	1.9	40	7	68	.12	2	0.5	0.4	32	INT L			
28	1544	1.49	19	20.51	155 3.60	6.98	2.2	2.0	2.1	41	4	100	.12	2	0.5	0.7	27	SF5 L			
28	1620	3.77	19	20.88	155 2.92	6.91	2.0	1.9	2.0	37	1	122	.11	2	0.4	0.5	23	SF5			
28	1954	30.87	19	25.84	155 15.96	11.36	2.7	3.1	1.1	16	3	145	.14	3	1.5	1.1	2	INT L			
28	2044	12.41	19	19.57	155 12.39	6.56	1.4	1.2	1.5	28	2	85	.10	5	0.4	1.0	21	SF2			
28	2053	43.25	19	19.39	155 13.31	9.03	1.4	1.2	1.4	24	2	73	.09	4	0.5	0.9	18	SF2			
28	2239	20.11	19	19.48	155 8.64	7.38	1.9	2.1	1.7	46	7	79	.14	4	0.4	0.5	39	SF4			
29	010	22.00	19	25.04	155 16.17	11.90	2.1	2.3	1.6	19	3	110	.14	1	1.1	0.6	17	INT L			
29	658	5.64	19	25.45	155 16.04	9.01	2.7	3.0	1.9	22	6	129	.12	2	0.8	0.5	16	INT L			
29	741	57.34	19	25.01	155 17.26	9.34	2.6	3.1	2.0	20	4	85	.11	0	0.7	0.6	17	INT L			
29	1149	31.92	19	25.00	155 15.55	7.56	2.6	3.1	1.9	23	5	126	.14	2	0.8	0.6	19	INT L			
29	1311	19.01	19	43.55	155 1.68	0.00	2.6	2.8	2.1	35	1	203	.27	25	1.3	2.0	38	HILL B*			

## 1989 HVO EARTHQUAKE SUMMARY LIST

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ORIGIN TIME			LAT N		LON W		DEPTH AMP		CD		GAP RMS		MIN ERH		ERZ NO							
YEAR	MON	DA	HRMN	SEC	DEG	MIN	DEG	MIN	RM	MAG	MAG	NR	NS	DEG	SEC	DIS	RM	RM	FN	RMK		
1989	MAR	29	1938	34.97	19	18.50	155	15.03	8.29	1.4	1.2	1.4	30	2	109	.09	4	0.4	0.7	21	SF1	
		29	2112	46.61	19	24.78	155	17.12	11.69	2.7	3.2	1.8	26	7	50	.15	0	0.8	0.6	19	INT L	
		30	3	6	40.12	19	26.02	155	15.78	10.13	2.4	2.3	1.7	21	4	159	.11	3	1.0	0.5	17	INT L
		30	1017	54.94	19	23.82	155	19.11	9.34	2.8	2.1	1.9	17	7	183	.11	4	1.5	0.6	11	KAO L	
		30	12	4	48.25	19	17.22	155	30.15	10.12	1.4	1.7	35	4	48	.13	4	0.4	0.7	32	LSW	
		30	1415	8.58	20	3.10	155	8.86	4.06	1.4	1.5	1.0	2	302	.15	27	1.9	2.6	5	KEA		
		30	15	2	44.97	19	19.51	155	11.50	6.75	1.2	1.5	1.8	33	4	95	.10	6	0.4	0.8	21	SF3
		30	1617	24.35	19	25.17	155	16.09	11.10	2.8	3.2	1.4	15	2	118	.12	2	0.8	1.2	3	INT L	
		30	1641	29.01	19	19.88	155	0.39	4.79	2.2	2.7	2.7	39	0	209	.13	4	0.9	1.5	22	SSF	
		30	1745	7.69	19	28.55	155	26.87	6.23	1.8	1.6	1.6	51	11	41	.12	7	0.2	0.7	42	KAO	
		30	20	4	6.40	19	23.21	155	20.18	4.99	0.9	1.2	1.1	10	2	215	.08	1	1.0	1.0	0	KAO L
		30	2226	59.86	19	21.60	155	4.82	6.38	1.1	1.2	1.6	24	0	82	.13	5	0.6	1.3	16	SF5	
		31	5	14.28	19	26.66	155	15.75	24.98	2.5	3.3	1.7	10	0	166	.07	3	2.7	7.5	0	DEP L	
		31	8	5	17.43	19	52.21	155	15.68	12.01	3.8	4.3	4.2	49	1	254	.10	39	1.6	1.2	48	LOI
		31	1610	1.27	19	22.42	155	14.62	5.20	2.4	3.1	1.7	11	4	176	.15	2	1.6	1.4	1	INT L	
		31	1732	18.82	19	25.00	155	19.42	6.21	2.4	2.1	1.6	38	8	38	.12	2	0.3	0.6	31	KAO	
		31	1738	34.33	19	25.06	155	19.23	6.35	2.7	2.7	2.2	44	8	37	.12	3	0.3	0.5	36	KAO	
		31	1818	52.48	19	25.07	155	19.40	6.60	2.1	1.7	1.4	32	8	68	.10	3	0.4	0.6	24	KAO	
		31	1955	54.13	19	26.06	155	17.35	8.23	2.6	3.2	1.8	23	9	95	.11	1	0.8	0.6	13	INT L	
		31	2018	29.48	19	17.40	155	12.90	7.61	1.8	1.4	1.5	27	7	146	.10	1	0.5	0.7	20	SF2 L	
APR		1	2	7	35.70	19	27.55	155	15.76	4.12	2.2	2.3	1.6	17	5	225	.12	2	0.7	1.0	12	SNC L
		1	553	6.16	19	23.20	155	17.41	14.75	2.8	3.1	1.9	19	6	60	.12	1	1.0	0.7	15	DEP L	
		1	930	33.90	19	25.06	155	18.83	14.37	2.7	3.3	1.7	18	7	86	.12	1	1.3	0.8	14	DEP L	
		1	11	7	17.17	19	18.83	155	13.43	7.62	1.9	1.8	1.7	34	5	77	.13	3	0.5	0.7	31	SF2
		1	1351	23.94	19	25.87	155	16.84	11.71	2.5	2.8	1.9	15	5	112	.13	2	1.2	0.6	11	INT L	
		1	16	8	59.40	19	20.71	155	12.94	9.02	1.4	1.5	1.5	22	2	66	.07	4	0.6	1.0	23	SF2
		1	1859	4.44	19	24.91	155	16.44	9.22	2.1	2.0	1.5	16	3	100	.13	1	0.8	0.9	12	INT L	
		1	2131	25.12	19	25.07	155	16.83	10.92	1.9	1.9	1.3	18	5	95	.08	0	0.6	0.7	12	INT L	
		2	044	8.75	19	25.27	155	16.23	12.67	2.7	2.8	1.5	18	6	117	.11	2	0.9	0.7	12	INT L	
		2	221	3.90	19	19.17	155	11.55	5.45	1.5	1.1	1.5	26	6	103	.10	5	0.4	1.2	24	SF3	
		2	819	48.94	19	24.32	155	10.10	17.51	2.4	2.0	1.5	12	4	299	.14	7	2.2	2.5	0	DEP	
		2	1021	51.18	19	24.75	155	16.72	10.18	2.6	3.3	1.0	13	1	91	.11	1	0.8	1.0	1	INT L	
		2	1216	36.20	19	24.14	155	16.33	10.45	2.6	2.9	1.7	11	2	114	.10	2	1.8	1.0	1	INT L	
		2	1854	37.60	19	25.68	155	20.86	7.08	2.5	3.0	1.4	11	2	304	.10	4	2.1	1.4	1	KAO L	
		2	2023	0.50	19	21.54	155	30.42	10.07	2.0	1.6	1.5	34	2	47	.12	5	0.4	0.6	22	KAO	
		3	027	36.98	19	22.19	155	17.65	30.76	2.4	2.3	2.2	59	14	31	.11	3	0.6	0.4	46	DEP	
		3	154	8.35	19	23.09	155	17.32	12.63	2.4	2.6	1.6	20	5	65	.15	1	0.9	1.0	16	INT L	
		3	854	13.61	19	25.32	155	16.43	12.11	2.8	3.5	1.8	27	5	72	.14	1	0.8	0.5	24	INT L	
		3	1052	18.36	19	24.55	155	15.65	11.14	2.9	3.4	2.0	25	5	79	.10	2	0.7	0.5	19	INT L	
		3	1450	24.59	19	19.69	155	11.55	8.39	1.8	1.5	1.8	30	1	91	.09	5	0.5	0.9	23	SF3	
		3	2127	10.17	19	11.46	155	27.22	9.31	2.1	1.8	1.8	46	9	126	.14	4	0.4	0.5	37	LSW	
		3	2342	17.84	19	25.14	155	15.64	15.65	2.6	3.0	1.8	19	2	85	.12	2	1.0	0.5	20	DEP L	
		4	145	36.15	19	17.77	155	12.88	9.68	2.0	1.9	1.9	51	7	122	.12	2	0.4	0.3	45	SF2	
		4	657	23.55	19	25.62	155	15.96	12.55	2.8	3.2	1.9	21	4	92	.18	2	0.9	0.7	18	INT L	
		4	735	20.76	19	19.37	155	11.78	7.79	1.9	1.8	1.9	50	7	84	.14	5	0.4	0.5	44	SF3	
		4	752	20.76	19	19.37	155	11.78	7.79	1.9	1.8	1.9	50	7	84	.14	5	0.4	0.5	44	SF3	

## 1989 HVO EARTHQUAKE SUMMARY LIST

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YEAR	MON	DA	HRMN	SEC	LAT N	DEG MIN	LOW W	DEPTH	AMP	DUR	CD	MAG	MAG	NR	NS	DEG	SEC	DYS	RM	RM	FM	RMK	ERZ	NO
ORIGIN TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME
1989	APR	4	9	57	37	18	59.56	155	17.15	22.42	4.5	4.6	4.8	60	11	256	.14	26	0.8	2.2	53	LOI	F	
4	955	53.80	19	24.81	155	15.81	8.35	2.4	2.6	1.9	15	1	110	.12	2	0.9	1.3	16	INT	L				
4	1058	51.59	19	21.09	155	6.93	6.17	1.6	1.4	1.6	31	5	88	.13	4	0.5	0.9	27	SF4					
4	1311	33.66	19	20.86	155	12.04	8.85	2.2	2.1	2.3	46	9	66	.12	4	0.4	0.5	38	SF3					
4	2116	14.01	19	24.96	155	15.67	7.80	2.4	2.8	1.4	21	5	115	.15	2	0.9	0.6	16	INT	L				
4	2148	5.14	19	15.30	155	28.50	9.40	1.2	1.5	38	6	88	.13	3	0.3	0.5	38	LSW						
5	233	3.64	19	19.32	155	10.96	6.88	1.5	1.4	1.5	50	11	102	.17	5	0.4	0.6	41	SF3					
5	359	59.54	19	23.45	155	16.78	9.14	1.8	1.7	1.2	17	2	83	.08	1	0.7	0.7	15	INT	L				
5	435	37.52	19	23.87	155	30.21	9.21	1.6	1.2	1.4	42	3	34	.13	5	0.4	0.5	40	KAO					
5	539	28.95	19	29.48	155	51.92	11.36	2.9	3.2	2.8	40	7	185	.14	11	0.7	0.3	34	KON	F				
5	635	11.10	19	28.70	155	51.26	9.09	2.5	1.7	1.7	33	4	179	.18	10	0.7	0.6	30	KON					
5	7	1	30.26	19	14.37	155	34.10	9.09	2.9	2.9	2.8	45	5	110	.15	5	0.4	0.7	45	LSW				
5	840	20.86	19	20.26	155	12.85	6.71	1.4	1.1	1.4	26	2	77	.12	4	0.5	0.9	25	SF2					
5	927	27.78	19	17.48	155	27.63	9.99	1.3	1.4	35	4	50	.15	6	0.4	0.6	34	LSW						
5	1457	56.35	19	16.67	155	14.49	9.24	1.8	1.4	1.7	31	7	197	.09	2	0.6	0.4	30	SF2					
5	21	0	24.75	19	19.60	155	11.60	8.64	3.0	3.1	3.1	52	8	92	.11	5	0.4	0.4	35	SF3				
5	2311	38.32	19	24.34	155	17.96	11.19	2.6	3.1	1.7	19	2	55	.14	2	0.7	0.9	17	INT	L				
6	348	5.32	19	14.01	155	37.63	4.09	1.9	1.2	1.7	37	2	90	.18	13	0.6	2.2	37	LSW					
6	544	44.96	19	18.49	155	15.48	7.88	1.4	1.4	1.5	41	5	106	.13	5	0.4	0.5	35	SF1					
6	550	35.83	19	18.91	155	15.99	7.51	1.5	1.4	1.6	35	6	113	.15	4	0.4	0.6	33	SF3					
6	1427	34.78	19	0.65	157	0.20	40.23	2.9	2.4	1.6	1	334	.17	122	5.2	4.4	4	DIS						
6	1626	19.04	19	24.44	155	25.18	7.79	1.9	1.7	1.8	40	8	35	.12	1	0.3	0.7	28	KAO					
6	2140	38.37	19	25.50	155	17.39	8.25	2.5	2.7	1.8	17	5	132	.13	0	1.0	0.6	16	INT	L				
6	2223	15.26	19	26.06	155	16.49	12.46	2.7	2.8	1.7	17	2	129	.14	2	1.2	0.7	16	INT	L				
6	2251	35.80	19	24.28	155	16.15	11.71	2.2	1.6	1.5	22	5	84	.07	1	0.8	0.5	17	INT	L				
6	2328	14.22	19	23.30	155	19.21	6.32	2.2	2.3	1.5	17	5	98	.13	4	0.6	1.3	16	KAO	L				
7	1	2	44.27	19	18.35	155	13.45	6.42	1.4	1.1	1.5	41	6	81	.15	2	0.4	0.6	38	SF2				
7	348	7.64	19	23.68	155	17.44	12.34	2.8	3.1	1.8	19	4	59	.14	1	1.0	1.0	16	INT	L				
7	647	36.58	19	25.88	155	17.37	10.68	2.0	1.6	1.4	18	5	94	.14	1	1.0	0.7	15	INT	L				
7	820	26.52	19	23.59	155	19.38	10.03	2.8	3.0	1.6	18	3	77	.17	1	0.9	1.3	16	KAO	L				
7	949	52.58	19	25.59	155	15.41	12.63	1.8	1.4	1.2	17	3	159	.12	3	1.3	0.8	15	INT	L				
7	1054	24.65	19	26.51	155	15.03	6.67	1.7	1.3	1.1	17	4	204	.15	4	0.9	0.6	13	INT	L				
7	1251	31.22	19	24.91	155	16.94	10.00	2.1	2.5	1.9	20	4	91	.12	0	0.8	0.7	18	INT	L				
7	1343	42.16	19	22.41	155	0.81	8.14	2.8	2.5	2.7	51	9	158	.12	6	0.5	0.4	45	SF5	F				
7	1855	34.77	19	33.89	155	41.36	10.05	3.0	2.0	2.4	46	4	132	.14	10	0.5	0.5	43	MLO					
7	1922	36.43	19	28.47	155	27.34	6.27	2.5	2.1	2.0	52	10	54	.14	7	0.3	0.8	44	KAO					
7	23	4	16.65	19	28.35	155	15.25	30.98	2.4	2.7	2.6	58	10	43	.12	3	0.5	0.4	49	DEP				
8	016	10.61	19	50.68	155	41.82	12.72	1.4	1.3	22	1	205	.11	4	2.0	0.8	24	KEA						
8	2	0	26.12	19	26.13	155	14.64	10.39	2.5	2.5	1.8	17	3	206	.12	3	1.3	0.8	15	INT				
8	334	50.14	19	25.30	155	16.01	10.13	2.0	1.4	1.3	18	2	125	.08	2	0.7	1.2	18	INT	L				
8	458	15.32	19	24.42	155	18.57	6.42	3.1	3.3	3.6	53	11	33	.13	2	0.3	0.4	46	INT					
8	9	9	53.16	19	21.31	155	14.01	26.60	1.5	1.6	41	5	55	.10	3	0.8	0.6	36	DEP					
8	1610	2.53	19	23.94	155	15.93	3.50	1.9	1.3	1.4	26	7	73	.12	1	0.4	0.3	19	SEC					
8	1834	31.59	19	23.33	155	16.91	12.18	2.2	2.2	1.5	20	4	55	.11	0	0.8	0.8	16	INT	L				
8	1921	3.68	19	44.33	155	11.33	40.65	2.2	2.1	1.9	52	12	169	.13	23	0.6	0.8	43	KEA					

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## 1989 HVO EARTHQUAKE SUMMARY LIST

ORIGIN TIME			LAT N		ION W		DEPTH AMP		DUR		CD		GAP RMS		MIN		ERH		ERZ		NO		
YEAR	MON	DA	HRMN	SEC	DEG	MIN	DEG	MIN	RM	MAG	MAG	NR	NS	DEG	SEC	DYS	RM	RM	FM	RMK			
1989	APR	8	2037	42.92	19	25.42	155	15.78	11.81	2.5	2.4	1.7	16	2	137	.12	2	1.2	0.6	16	INT	L	
		8	2050	9.67	19	27.17	155	13.46	10.29	2.2	2.2	1.5	20	5	249	.10	5	1.1	0.6	16	GLN	L	
		8	21	8	58.35	19	23.90	155	16.37	6.45	2.3	2.4	1.7	18	3	72	.17	0	0.8	0.7	17	INT	L
		8	2142	48.99	19	25.15	155	15.55	11.42	2.0	1.7	1.4	21	4	133	.13	2	1.1	0.7	17	INT	L	
		8	22	3	0.10	19	24.07	155	15.74	6.97	1.4	1.3	1.0	16	2	78	.14	2	0.7	0.7	15	INT	L
		8	2251	27.99	19	23.62	155	17.73	8.37	2.4	2.5	1.7	16	2	63	.14	1	0.8	1.1	16	INT	L	
		9	138	5.56	19	43.83	155	50.63	17.20	2.2	2.0	1.8	21	2	234	.15	5	1.1	1.9	9	HUA		
		9	3	4	33.84	19	24.27	155	13.84	11.96	2.7	2.9	1.5	9	2	168	.16	1	1.7	1.2	1	SF2	L
		9	449	48.72	19	12.32	155	7.80	22.18	3.1	3.3	3.2	64	14	201	.13	9	0.6	1.0	51	DEP		
		9	650	32.87	19	24.46	155	15.75	5.93	1.5	1.3	1.1	17	3	94	.10	2	0.7	0.5	16	INT	L	
		9	836	2.16	19	24.83	155	19.22	6.90	2.1	1.5	1.2	29	5	65	.12	2	0.4	0.8	22	KAO		
		9	1016	7.63	19	17.54	155	12.93	7.65	1.5	1.2	1.5	16	1	133	.06	1	0.6	1.1	10	SF2		
		9	1340	58.04	20	33.69	155	52.84	43.62	2.8	2.3	2.3	22	2	325	.11	81	4.2	5.1	10	DIS		
		9	2134	32.03	19	15.25	155	14.76	29.31	2.4	2.0	2.1	45	9	165	.11	4	0.8	0.9	37	DEP		
		10	133	33.86	19	26.66	155	26.31	5.08	1.9	1.6	1.5	37	7	50	.13	3	0.3	1.2	31	KAO		
		10	3	7	31.69	19	24.51	155	17.19	9.90	2.4	3.0	1.6	16	6	69	.14	1	0.9	0.7	9	INT	L
		10	3	9	32.22	19	25.81	155	18.62	7.92	1.9	1.9	1.3	14	6	152	.16	2	1.4	0.8	6	INT	L
		10	313	4.63	19	23.94	155	16.38	13.94	2.2	1.9	1.3	12	4	73	.10	2	1.5	0.8	8	DEP	L	
		10	318	7.68	19	24.90	155	17.58	9.92	2.4	2.5	1.4	18	6	74	.10	1	0.8	0.8	11	INT	L	
		10	334	2.05	19	25.45	155	15.39	11.98	2.1	2.5	1.2	14	7	154	.08	2	1.3	0.6	6	INT	L	
		10	352	9.95	19	25.19	155	17.40	9.38	1.9	1.9	1.2	14	3	85	.12	1	0.9	1.3	10	INT	L	
		10	443	37.40	19	25.69	155	16.31	7.25	2.4	2.6	1.7	19	7	127	.13	2	0.7	0.5	13	INT	L	
		10	522	35.28	19	25.74	155	18.05	10.61	2.4	2.5	1.6	16	5	85	.12	1	1.0	0.6	12	INT	L	
		10	620	43.89	19	25.53	155	19.53	8.01	2.4	2.6	1.6	13	3	119	.09	3	0.8	1.0	11	KAO	L	
		10	843	46.50	19	26.27	155	17.69	11.93	2.4	2.4	1.6	20	6	96	.13	2	1.1	0.6	14	INT	L	
		10	11	3	25.64	19	24.32	155	23.74	12.76	2.5	2.6	1.2	13	2	131	.23	3	1.8	2.7	1	KAO	L
		10	14	2	36.00	19	25.09	155	17.13	12.33	2.2	2.5	1.3	19	4	90	.12	0	0.9	0.7	2	INT	L
		10	1559	34.86	19	23.22	155	20.34	14.44	2.2	2.2	1.6	11	0	156	.11	1	1.6	4.3	0	DML	L	
		10	1935	9.70	19	29.12	155	15.95	16.34	2.7	3.1	1.8	11	2	265	.14	3	2.8	1.8	1	DEP	L	
		10	20	4	20.49	19	25.71	155	14.21	6.35	2.1	2.2	1.3	14	3	235	.17	2	1.2	1.4	0	INT	L
		10	21	4	9.44	19	22.50	155	15.84	32.26	2.3	1.9	1.9	57	10	52	.11	0	0.6	0.5	38	DEP	
		10	2125	4.61	19	25.36	155	16.13	11.66	2.1	1.2	1.5	3	123	.11	2	1.0	0.8	4	INT	L		
		10	2311	5.06	19	25.33	155	16.15	8.60	2.1	1.4	21	7	121	.15	2	1.0	0.7	14	INT	L		
		11	234	42.98	19	23.40	155	17.64	6.82	2.4	1.7	14	2	76	.10	1	0.6	1.0	15	INT	L		
		11	236	54.05	19	27.43	155	14.08	21.10	2.3	1.6	18	5	250	.11	5	2.0	1.0	15	DEP	L		
		11	4	1	35.24	19	25.25	155	16.17	11.07	2.0	1.1	20	4	118	.11	2	0.9	0.5	16	INT	L	
		11	5	2	36.84	19	24.68	155	17.00	10.12	2.1	1.4	21	5	84	.12	0	0.8	0.5	16	INT	L	
		11	612	14.95	19	21.09	155	0.32	8.52	2.1	1.9	1.8	36	6	190	.15	5	0.7	0.6	31	SF5		
		11	716	14.17	19	26.58	155	14.43	9.02	2.4	2.4	1.6	16	2	222	.15	4	1.3	1.0	15	INT	L	
		11	1415	29.20	18	26.66	156	59.72	32.69	2.6	2.2	2.4	4	329	.14	139	2.8	4.6	20	DIS			
		11	1738	22.01	19	18.82	155	13.80	8.34	2.2	2.2	2.1	43	3	87	.13	3	0.5	0.6	34	SF2		
		11	1925	29.76	19	24.75	155	16.60	0.64	1.9	2.6	1.8	15	1	192	.16	1	0.3	0.3	1	SNC	L	
		12	047	43.05	19	23.64	155	18.93	7.07	2.1	2.1	1.5	16	2	74	.13	4	0.7	1.3	15	INT	L	
		12	350	44.46	19	24.40	155	15.10	5.14	2.0	2.2	1.2	17	3	123	.12	1	0.8	0.6	15	INT	L	
		12	356	18.00	19	20.32	155	4.59	7.53	2.0	1.9	2.1	49	7	122	.11	3	0.3	0.4	3	SF5		
		12	356	18.00	19	20.32	155	4.59	7.53	2.0	1.9	2.1	49	7	122	.11	3	0.3	0.4	3	SF5		
		12	356	18.00	19	20.32	155	4.59	7.53	2.0	1.9	2.1	49	7	122	.11	3	0.3	0.4	3	SF5		
		12	356	18.00	19	20.32	155	4.59	7.53	2.0	1.9	2.1	49	7	122	.11	3	0.3	0.4	3	SF5		
		12	356	18.00	19	20.32	155	4.59	7.53	2.0	1.9	2.1	49	7	122	.11	3	0.3	0.4	3	SF5		
		12	356	18.00	19	20.32	155	4.59	7.53	2.0	1.9	2.1	49	7	122	.11	3	0.3	0.4	3	SF5		







## 1989 HVO EARTHQUAKE SUMMARY LIST

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ORIGIN TIME		LAT N		LONG W		DEPTH		AMP		DUR		CD		GAP		RMS		MIN		ERH		ERZ		NO	
YEAR	MON	DA	HRMN	SEC	DEG	MIN	DEG	MIN	RM	MAG	MAG	NR	NS	DEC	SEC	DIS	RM	RMS	MIN	ERH	RM	FN	RMK		
1989	APR	27	1959	34.67	19	23.99	155	16.97	11.45	2.6	1.2	15	4	87	14	1	1.4	0.9	1	INT	L				
		27	20	0	28.70	19	24.85	155	16.18	10.81	2.3	2.8	1.8	13	3	104	23	1	2.8	1.5	1	INT	L		
		27	2028	58.58	19	22.95	155	20.08	12.67	2.2	2.2	1.1	11	2	256	10	2	2.3	1.4	3	KAO	L			
		27	2233	1.06	19	25.43	155	17.95	8.50	2.2	2.4	1.5	17	3	76	14	1	0.9	0.6	16	INT	L			
		28	2	58.32	19	7.41	155	27.77	33.09	2.0	1.5	1.6	48	9	172	11	4	0.8	0.6	39	DLS				
		28	238	46.16	19	25.33	155	15.69	8.39	2.1	2.3	1.4	17	3	136	16	2	1.1	0.7	14	INT	L			
		28	556	49.77	19	24.79	155	15.84	10.52	2.0	2.0	1.4	22	6	108	20	2	1.3	0.7	16	INT	L			
		28	736	26.11	19	24.06	155	17.10	9.05	2.4	2.1	1.7	19	4	70	12	1	0.8	0.6	15	INT	L			
		28	753	38.02	19	21.49	155	11.99	7.14	2.1	2.5	2.4	45	4	150	13	3	0.6	0.6	43	SFS	F			
		28	1134	18.40	19	25.36	155	16.69	8.66	2.0		1.4	18	10	106	11	1	0.9	0.6	9	INT	L			
1989	MAY	28	1618	51.55	19	27.40	155	13.76	7.09	2.4	2.6	1.7	16	4	233	12	5	0.8	1.0	15	GIN	L			
		28	1834	20.59	19	17.56	155	12.82	7.32	1.2	1.7	31	7	137	11	2	0.4	0.6	26	SF2					
		28	1927	0.92	19	22.05	155	13.36	6.49	1.6	1.7	1.5	24	7	50	15	1	0.4	0.5	18	SF2				
		28	2045	52.24	19	17.62	155	13.11	7.85	1.5	1.2	1.5	29	5	117	12	1	0.6	1.0	24	SF2				
		28	2236	47.99	19	26.50	155	14.81	1.23	2.0	2.1	1.6	15	7	210	15	3	0.3	0.5	9	SNC	L			
		29	257	47.90	19	27.01	155	12.95	6.42	2.2	1.7	1.4	16	8	259	08	5	0.8	1.4	9	GIN	L			
		29	626	31.39	19	25.69	155	15.57	9.88	2.5		1.8	17	8	156	12	3	1.0	0.7	10	INT	L			
		29	630	58.59	19	26.00	155	15.85	8.54	1.9	2.2	1.5	11	6	155	13	3	1.0	0.9	5	INT	L			
		29	737	51.89	19	27.05	155	13.00	5.86	2.3	2.2	1.6	12	5	260	14	5	1.2	2.8	7	GIN	L			
		29	958	10.22	19	19.85	155	12.41	8.67	2.8	2.9	3.3	52	9	80	13	5	0.4	0.3	48	SF2				
1989	MAY	29	1432	49.96	19	26.67	155	14.96	8.99	2.1	2.0	1.4	16	9	211	15	4	0.9	1.3	8	INT	L			
		29	1457	2.77	19	19.53	155	13.81	8.52	2.6	2.2	2.8	51	11	70	13	5	0.3	0.3	44	SF2				
		29	1943	59.51	19	26.17	155	15.31	8.04	2.3	2.1	1.6	16	6	186	10	3	0.8	1.5	10	INT	L			
		29	2320	57.03	19	20.33	155	11.21	8.93	2.0	1.6	2.0	37	8	79	13	4	0.5	0.4	37	SF3				
		30	257	59.23	19	26.07	155	15.63	1.65	2.1	2.1	1.7	14	2	168	12	3	0.4	0.7	15	SNC	L			
		30	4	5.49	19	19.45	155	26.60	9.35		1.4	1.5	43	5	53	16	6	0.4	0.5	39	KAO				
		30	953	7.59	19	24.56	155	15.60	14.11	2.4	2.8	1.6	17	3	101	21	2	1.6	1.0	14	DEP	L			
		30	15	4	16.87	19	29.17	155	35.25	1.54		1.2	1.1	14	3	85	11	1	0.3	0.3	12	MLO			
		30	1917	7.68	19	24.96	155	15.98	8.14	2.4	3.0	1.7	18	3	113	15	2	0.9	0.6	15	INT	L			
		30	2034	14.98	19	16.98	155	13.00	9.03	2.6	2.6	2.5	55	9	150	14	1	0.4	0.3	47	SF2				
1989	MAY	30	2034	14.98	19	16.98	155	13.00	9.03	2.6	2.6	2.5	55	9	150	14	1	0.4	0.3	47	SF2				
		MAY	1	658	44.32	19	20.32	155	19.34	7.67		1.3	23	4	53	18	3	0.5	0.9	21	SWR				
			1	1216	35.86	19	26.82	155	15.20	14.70	2.2	2.2	1.5	15	3	214	22	5	2.5	1.9	0	DEP	L		
			1	1324	7.40	19	25.11	155	14.71	3.83	2.4	2.8	2.2	11	0	237	10	4	1.7	1.0	0	SNC	L		
			1	1532	55.56	20	17.29	155	35.66	37.48	1.8	1.9	2.0	15	3	281	10	26	2.0	1.9	11	KOH			
			1	1641	13.42	19	18.09	155	12.99	9.42	2.4	2.4	2.3	53	7	141	11	8	0.3	0.4	33	SF2			
			1	1819	24.92	19	18.42	155	12.82	3.43	1.9	1.6	1.8	35	3	101	11	3	0.3	0.8	23	SSF			
			1	1823	12.16	19	17.99	155	12.94	8.97	2.3	2.2	2.1	48	4	142	12	9	0.4	0.5	30	SF2			
			1	1921	48.42	19	24.67	155	13.99	13.02	2.4	2.3	1.4	13	3	255	10	5	1.8	0.8	1	DEP	L		
			2	1456	12.13	19	17.23	155	13.04	7.86	1.5	1.3	1.4	35	6	155	12	1	0.5	0.6	29	SF2			
1989	MAY	2	356	58.53	19	25.33	155	16.12	7.05	2.1	2.1	1.4	16	1	123	11	2	0.7	0.7	15	INT	L			
		2	914	48.15	19	25.78	155	29.32	10.85	2.1	1.6	1.6	46	8	39	13	7	0.3	0.4	38	KAO	L			
		2	1213	37.99	19	23.96	155	15.04	7.23	2.3	2.4	1.6	20	9	84	14	2	0.8	0.7	10	INT	L			
		2	1254	57.46	19	22.25	155	20.32	27.49	2.4	2.1	2.2	58	13	45	11	3	0.5	0.4	46	DNL				
		2	1343	39.49	19	23.49	155	15.58	9.53	2.5	3.0	1.5	15	3	86	10	2	0.9	0.6	2	INT	L			
		2	1433	47.06	19	21.81	155	18.41	10.29	2.6	2.9	1.3	13	3	104	24	4	1.6	2.9	0	SWR	L			
		2	1433	47.06	19	21.81	155	18.41	10.29	2.6	2.9	1.3	13	3	104	24	4	1.6	2.9	0	SWR	L			
		2	1433	47.06	19	21.81	155	18.41	10.29	2.6	2.9	1.3	13	3	104	24	4	1.6	2.9	0	SWR	L			
		2	1433	47.06	19	21.81	155	18.41	10.29	2.6	2.9	1.3	13	3	104	24	4	1.6	2.9	0	SWR	L			
		2	1433	47.06	19	21.81	155	18.41	10.29	2.6	2.9	1.3	13	3	104	24	4	1.6	2.9	0	SWR	L			

## 1989 HVO EARTHQUAKE SUMMARY LIST

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YEAR	MON	DA	HRMN	SEC	LAT N	DEG MIN	LONG W	DEPTH RM	AMP RM	DUR CD	GAP NS	RMS DEG	MIN SEC	ERH DIS	ERZ RM	NO FM	RMK				
1989	MAY	2	2250	31.19	19	21.62	155 2.66	8.37	2.2	2.1	2.4	50	6	128	12	3	0.5	0.3	44	SFS	
		2	23	0	51.26	19	25.87	155 19.05	7.43	2.2	1.6	1.4	37	7	55	13	3	0.4	0.5	30	KAO
		2	2357	52.26	19	25.85	155 19.14	7.58	2.4	2.2	1.7	46	10	38	13	3	0.4	0.4	36	KAO	
		3	1233	38.01	19	22.82	155 14.04	47.94	2.3	2.8	1.8	33	11	120	14	2	1.5	0.7	20	DEP	
		3	1354	16.82	19	24.38	155 16.52	14.99	2.6	2.5	1.8	19	8	114	13	1	1.2	0.7	14	DEP L	
		4	1437	26.69	19	23.48	155 20.09	6.69	2.3	2.7	1.2	11	2	148	10	1	1.1	1.2	1	KAO L	
		4	15	4	48.09	19	25.83	155 16.63	10.66	2.2	1.9	1.3	13	3	118	07	2	1.5	0.8	3	INT L
		4	16	0	12.70	19	21.78	155 16.89	7.93	2.2	2.4	1.3	16	5	128	26	2	1.3	1.8	6	SF1 L
		4	1633	1.56	19	25.03	155 17.08	7.50	2.1	2.2	1.6	11	2	90	07	1	0.8	0.9	1	INT L	
		4	1720	49.31	19	27.30	155 19.55	0.01	2.0	2.3	1.7	9	2	294	24	5	1.6	1.1	1	KAO L*	
		4	1845	15.56	19	23.97	155 17.95	11.45	2.0	1.9	1.4	18	5	89	25	2	1.8	1.1	1	INT L	
		4	1946	30.93	19	27.06	155 16.89	13.14	2.1		1.2	13	5	215	24	3	5.4	1.4	1	DEP L	
		4	1947	10.48	19	29.49	155 13.91	4.83	2.4	2.8	1.7	10	2	258	09	6	1.3	4.4	1	GLN L	
		4	2026	16.35	19	22.25	155 4.35	8.71	2.0	1.7	2.0	40	3	89	10	4	0.4	0.5	33	SFS	
		4	2048	48.54	19	23.50	155 15.03	9.59	2.7	2.9	1.6	14	5	99	15	3	1.8	1.2	2	INT L	
		4	2153	0.14	19	24.90	155 16.04	5.30	1.9	2.0	1.5	13	0	108	10	2	0.6	1.1	15	INT L	
		5	016	30.01	19	24.46	155 15.99	11.42	2.5	2.7	1.6	18	3	95	11	1	1.0	0.7	16	INT L	
		5	120	53.06	19	25.53	155 19.41	9.38	1.8	1.6	1.3	14	3	134	16	3	1.2	1.1	14	KAO L	
		5	541	5.29	19	23.84	155 15.92	10.42	2.7	3.1	1.7	20	5	73	12	1	1.0	0.6	16	INT L	
		5	823	19.78	19	24.85	155 15.88	9.01	2.3	2.5	1.6	19	5	110	12	2	1.0	0.6	15	INT L	
		5	1026	29.71	19	23.09	155 17.73	8.48	2.3	2.6	1.6	22	6	63	30	1	0.9	1.1	4	INT L	
		5	1327	24.60	19	25.25	155 15.71	9.75	2.6	2.6	1.9	18	2	132	10	3	0.9	0.6	2	INT L	
		5	14	6	54.53	19	48.44	155 14.57	14.48		1.4	1.6	27	0	177	12	14	2.0	2.2	23	KEA
		5	1414	34.43	19	24.88	155 15.65	11.04	1.8	1.6	1.3	17	4	117	07	2	0.9	0.7	2	INT L	
		5	16	5	49.70	20	2.38	156 32.87	17.35		2.3	2.0	29	6	302	15	81	1.2	17.6	24	DNS *
		5	1824	49.30	19	25.64	155 15.68	9.79	2.4	2.6	1.7	20	4	87	15	3	0.9	0.6	18	INT L	
		6	0	8	3.93	19	24.42	155 17.47	7.60	2.1	2.3	1.5	22	6	54	13	1	0.7	0.6	16	INT L
		6	125	53.51	19	25.15	155 13.44	10.12	2.6	2.6	2.7	56	9	135	11	8	0.4	0.4	52	SF2	
		6	334	7.34	19	18.85	155 15.28	6.72	1.9	2.0	1.4	22	6	176	16	3	0.9	0.6	16	INT L	
		6	643	41.25	18	48.22	155 13.79	39.63	2.9	2.7	2.6	53	7	266	12	47	1.2	1.7	52	LOI	
		6	8	9	27.72	19	21.50	155 2.01	8.88	3.7	3.7	3.9	56	6	150	11	3	0.5	0.3	51	SF5 F
		6	949	12.18	19	25.71	155 14.99	6.53	2.0	1.8	1.4	16	4	210	12	2	1.1	0.6	15	INT L	
		6	1139	12.28	19	49.26	156 3.19	8.20	1.5	1.4	1.6	1	1	327	21	46	3.5	3.2	15	HUA	
		6	12	5	39.21	19	24.46	155 16.02	11.21	2.5	2.4	1.8	22	6	92	11	1	1.0	0.5	15	INT L
		6	1214	39.49	19	26.13	155 14.25	21.21	1.8		1.5	20	4	216	12	3	0.6	0.9	16	SNC L	
		6	1223	35.85	19	28.99	155 25.95	1.99	1.4	1.3	20	4	100	15	5	0.3	0.9	17	KAO L		
		6	1225	40.89	19	29.66	155 26.53	3.43	2.6	2.5	2.0	52	8	42	14	5	0.3	0.9	46	KAO	
		6	1229	21.10	19	28.62	155 25.75	1.98	1.4	1.2	1.2	18	3	84	10	5	0.3	0.9	17	KAO	
		6	1230	18.85	19	24.70	155 16.71	6.61	2.0	2.0	1.4	18	3	77	13	1	0.7	0.6	16	INT L	
		6	1245	11.50	19	24.20	155 15.76	10.03	1.8	1.3	1.3	18	3	105	08	2	0.9	0.5	16	INT L	
		6	1332	44.82	19	24.74	155 15.82	9.41	2.3	2.6	1.8	19	4	106	11	2	0.9	0.6	16	INT L	
		6	1413	38.60	19	6.49	155 23.88	33.49	2.0	1.7	1.9	48	4	189	10	9	0.9	0.7	44	LOI	
		6	1418	22.69	19	25.03	155 15.11	9.32	2.4	2.6	1.7	20	4	143	11	2	0.9	0.5	17	INT L	
		6	1447	53.03	19	24.92	155 16.14	12.93	1.8	1.8	1.4	15	1	107	11	1	0.9	1.1	1.6	INT L	
		6	1640	0.85	19	25.79	155 15.66	9.09	2.2	2.4	1.6	20	4	156	11	3	1.0	0.5	16	INT L	

# 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	LON W	DEPTH		AMP	DUR	CD	GAP			RMS	MIN	ERR	ERZ NO				
			HR	MM			KM	MAG				NR	NS	DEG					SEC	DIS	KM	KM
1989	MAY	9	953	56.74	19	25.09	155	16.66	9.93	2.5	3.0	1.9	23	9	100	.10	1	0.6	0.5	13	INT L	
		9	1013	3.21	19	25.58	155	16.13	9.10	1.8	1.6	1.3	20	8	131	.08	2	1.0	0.7	12	INT L	
		9	1049	32.70	19	26.40	155	16.72	13.77	2.4	2.7	1.9	12	2	126	.08	3	1.2	1.6	1	DEP L	
		9	1853	1.48	19	18.11	155	14.98	8.88	1.5	1.2	1.3	21	0	132	.05	3	0.5	1.2	16	SF1	
		9	1916	20.37	19	24.47	155	15.63	13.51	2.2	2.7	1.3	18	4	96	.13	2	1.1	0.6	3	DEP L	
		9	22	0	9.15	19	25.35	155	16.91	11.05	2.6	3.1	1.3	25	9	61	.09	1	0.6	0.4	14	INT L
		10	227	59.57	19	21.60	155	3.35	6.58	2.0	1.9	2.1	45	4	103	.12	3	0.5	0.6	45	SFS	
		10	338	38.92	19	23.46	155	16.37	9.63	2.1	2.4	1.5	22	6	60	.13	1	0.8	0.7	16	INT L	
		10	938	42.16	19	25.06	155	14.60	14.68	2.2	2.1	1.6	16	6	212	.13	1	1.6	0.8	11	DEP L	
		10	1110	28.42	19	18.66	155	46.55	10.86	2.6	2.5	2.3	42	2	82	.13	11	0.6	0.4	41	KON	
1989	MAY	10	1357	52.19	19	22.01	155	18.45	7.06	2.1	1.7	1.3	9	2	215	.12	5	1.4	3.3	1	SWR L	
		10	1433	59.94	19	26.62	155	30.36	9.16	2.3	1.8	1.7	28	4	43	.10	9	0.4	1.1	17	KAO	
		10	1543	54.77	19	43.61	156	19.39	38.69	1.9	1.7	1.9	1	1	314	.08	51	3.7	3.1	7	HUA	
		10	16	1	24.36	19	21.38	155	24.86	13.69	2.0	1.6	1.7	44	6	46	.11	4	0.5	0.5	26	DEP
		10	1651	43.53	19	25.46	155	19.32	7.81	1.8	1.6	1.4	23	5	78	.11	3	0.6	0.8	15	KAO	
		10	1830	38.77	19	23.24	155	18.88	10.10	2.2	2.1	1.5	9	3	233	.13	3	2.3	1.5	0	INT L	
		10	1936	48.76	19	20.13	155	13.62	6.79	1.4	1.1	1.4	31	2	69	.12	5	0.4	0.7	26	SF2	
		10	2351	56.08	19	24.12	155	18.12	9.67	2.6	2.9	1.7	2	2	103	.11	2	0.8	0.9	16	INT L	
		11	549	48.01	19	26.33	155	14.40	2.33	1.8	1.8	1.3	17	2	216	.11	3	0.5	0.8	15	SNC L	
		11	549	48.01	19	26.33	155	14.40	2.33	1.8	1.8	1.3	17	2	216	.11	3	0.5	0.8	15	SNC L	

## 1989 HVO EARTHQUAKE SUMMARY LIST

ORIGIN TIME		LAT N		LON W		DEPTH AMP DUR CD				GAP RMS MIN ERH				ERZ NO	
YEAR	MON DA HRMN SEC	DEG MIN	DEG MIN	DEG MIN	KM	MAG	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	RM FM RMK
1989 MAY	6 1757	2.46	19 24.53	155 17.20	12.30	2.0	1.4	1.4	18	3	60	.18	1	1.1	1.0 15 INT L
	6 19	6 18.31	19 25.49	155 15.42	9.66	2.5	2.6	1.8	21	5	89	.13	2	0.7	0.6 19 INT L
	6 1923	3.25	19 23.70	155 16.56	9.53	2.1	1.8	1.3	19	4	66	.10	0	0.7	0.6 16 INT L
	6 1939	25.58	19 57.70	155 29.75	33.71	2.9	2.6	2.3	56	5	174	.12	18	0.6	0.9 51 KEA
	6 2022	47.85	19 26.01	155 15.71	7.01	2.3	2.5	1.8	21	5	162	.18	3	1.0	0.8 16 INT L
	6 2111	20.19	19 20.82	155 11.47	9.10	2.4	2.8	2.5	58	7	71	.13	4	0.4	0.4 52 SF3
	6 2248	37.74	19 21.73	155 28.84	3.69	2.2	2.2	1.8	42	3	40	.13	3	0.3	0.6 42 KAO
	6 2259	4.12	19 26.30	155 16.84	10.20	2.1	2.3	1.6	18	4	119	.15	1	0.9	1 INT L
	6 2351	3.26	19 26.66	155 15.61	9.10	1.9	1.9	1.3	18	5	189	.10	3	1.2	0.6 1 INT L
	7 054	31.51	19 31.97	155 37.97	10.34	1.9	1.1	1.2	37	3	48	.14	5	0.4	0.5 34 MLO
	7 129	50.86	19 25.94	155 16.82	6.81	2.2	2.6	1.6	20	3	115	.22	2	1.0	0.9 2 INT L
	7 151	1.22	19 21.39	155 16.10	5.15	1.7	1.2	1.3	13	4	239	.11	2	1.1	1.3 1 SF1 L
	7 4	37.48	19 25.38	155 15.85	8.76	2.2	2.3	1.6	8	1	200	.06	2	3.0	2.8 1 INT L
	7 541	55.08	19 22.90	155 16.79	8.08	1.9	2.2	1.3	15	5	80	.14	1	1.0	1.4 1 INT L
	7 735	8.71	19 24.04	155 18.09	10.47	2.0	1.9	1.4	11	2	130	.05	2	1.4	1.0 1 INT L
	7 915	20.02	19 25.19	155 15.68	10.60	2.0	1.6	1.2	15	5	130	.12	2	1.2	0.9 0 INT L
	7 915	58.21	19 18.75	155 13.24	7.57	1.8	1.5	1.6	31	4	83	.09	3	0.4	0.7 18 SF2
	7 1152	54.16	19 26.85	155 14.28	3.70	2.0	1.8	1.5	10	4	249	.06	4	0.6	1.3 1 SNC L
	7 16	8.16	55 19 25.31	155 15.15	9.56	2.1	2.2	1.5	14	1	146	.11	2	0.9	1.2 1 INT L
	7 16	8.16	55 19 25.31	155 15.15	9.56	2.1	2.2	1.5	14	1	146	.11	2	0.9	1.2 1 INT L
	7 16	8.16	55 19 25.31	155 15.15	9.56	2.1	2.2	1.5	14	1	146	.11	2	0.9	1.2 1 INT L

YEAR	MON	DA	HHRN	SEC	LAT N	DEG	MIN	LON W	DEPTH AMP	DUR	CD	GAP RMS	MIN	ERH	ERZ NO							
YEAR	MON	DA	HHRN	SEC	LAT N	DEG	MIN	LON W	KM	MAG	MAG	NR	NS	DEG	DIS	KM	FM	RMK				
1989	MAY	13	227	51.77	19	24.12	155	17.81	11.54	2.3	2.3	1.4	18	6	89	.16	2	1.3	0.9	11	INT L	
									8.14	2.6	2.7	1.9	25	10	119	.11	1	0.6	0.5	15	INT L	
									11.12	2.2	2.4	1.4	16	5	100	.11	1	1.1	0.8	13	INT L	
									9.45	2.2	2.4	1.5	20	8	169	.10	3	0.9	0.7	11	INT L	
									10.02	2.4	2.8	1.7	22	9	98	.12	1	0.9	0.7	12	INT L	
13	836	29.80	19	25.83	155	16.30			9.67	2.4	2.6	1.6	16	4	131	.13	2	0.9	0.9	12	INT L	
13	949	1.99	19	24.75	155	16.46			10.22	2.1	2.0	1.3	17	8	146	.13	1	1.7	0.9	10	INT L	
13	1030	30.14	19	25.87	155	16.76			9.50	2.1	1.9	1.4	18	6	115	.10	2	1.2	0.7	10	INT L	
13	1259	11.76	19	25.30	155	17.40			9.02	2.6	2.8	1.8	17	4	71	.13	0	0.9	1.0	14	INT L	
13	1620	12.09	19	24.18	155	17.61			10.06	1.9	1.9	1.2	17	8	179	.12	2	1.5	0.8	10	INT L	
13	1656	38.23	19	21.37	155	1.12			6.69	2.8	3.0	3.1	50	11	173	.12	4	0.6	0.5	47	SF5	
13	1939	34.53	19	20.12	155	11.58			8.18	1.8	1.4	1.7	35	3	82	.12	5	0.5	0.7	37	SF3	
13	2312	31.36	19	23.94	155	16.84			14.69	2.0	1.6	1.3	14	3	80	.13	1	1.8	1.2	1	DEP L	
13	2353	39.14	19	24.83	155	17.01			12.69	2.6	2.9	1.7	14	1	85	.12	0	1.3	2.7	0	INT L	
14	0	9.88	19	21.01	155	16.03			8.92	2.3	2.0	1.4	15	2	205	.27	3	1.7	2.6	1	SF1 L	
14	112	30.46	19	24.94	156	13.93			30.39		2.1	2.1	27	3	261	.14	34	2.2	1.4	15	KON	
14	2	5	30.41	19	24.06	155	18.56		11.45	2.6	2.9	1.7	14	3	71	.13	3	0.7	0.8	1	INT L	
14	557	36.72	19	25.02	155	16.06			13.15	2.5	2.9	1.6	17	5	116	.13	3	1.3	0.9	0.6	15	INT L
14	13	0	40.94	19	25.17	155	16.61		10.15	2.6	2.9	1.7	13	2	81	.17	2	1.1	1.3	3	INT L	
14	1646	45.89	19	24.34	155	17.49			0.39	1.2	1.8	1.3	13	0	64	.10	1	0.2	0.4	2	SSE L	
14	1810	12.78	19	47.04	155	7.57			38.11	2.6	1.7	1.8	39	5	198	.10	26	0.6	1.4	22	KEA	
14	1935	17.38	19	25.35	155	14.34			12.16	2.2	2.2	1.5	14	2	241	.19	1	2.2	1.0	2	INT L	
14	2327	6.73	19	24.25	155	16.45			9.63	2.0	1.6	1.2	16	3	80	.13	2	0.9	0.6	15	INT L	
14	2335	19.50	19	22.45	155	19.03			9.42	1.8	1.6	1.1	19	5	95	.14	3	0.8	1.3	15	KAO L	
15	055	38.13	19	26.50	155	14.71			6.85	1.8	1.7	1.2	20	5	213	.18	3	1.0	0.8	15	INT L	
15	527	26.25	19	25.88	155	15.07			6.75	2.1	2.1	1.2	16	5	142	.07	2	0.8	0.5	14	INT L	
15	852	39.77	19	21.88	155	26.69			10.04	2.4	2.4	2.1	45	7	45	.12	2	0.3	0.4	41	KAO	
15	1030	54.96	19	21.52	155	1.85			9.40		1.4	1.6	36	6	162	.13	4	0.6	0.5	33	SF5	
15	12	6	16.69	19	20.57	155	11.90		8.00	2.1	2.0	2.2	47	9	73	.12	4	0.4	0.5	42	SF3	
15	1331	1.68	19	19.73	155	7.91			7.72		1.1	1.4	23	2	94	.09	4	0.5	1.1	14	SF4	
15	1642	24.57	19	25.25	155	15.22			20.20	2.0	1.9	1.4	11	2	152	.06	2	2.0	3.0	2	DEP L	
15	17	1	4.09	19	19.87	155	6.81		7.98	1.6	1.6	1.6	32	2	115	.10	5	0.5	0.9	28	SF4	
16	231	21.35	19	18.05	155	30.22			9.03	2.2	1.9	1.9	46	6	43	.15	6	0.3	0.6	40	LSW	
16	548	50.77	19	20.42	155	11.05			8.84		1.2	1.4	35	6	78	.10	4	0.4	0.5	31	SF3	
16	826	48.79	19	22.11	155	29.88			9.66	2.0	1.2	1.4	36	4	34	.14	4	0.4	0.7	32	KAO	
16	1214	42.13	19	12.28	155	22.40			2.90		1.1	1.4	22	5	182	.13	5	0.6	0.9	17	SWR	
16	1647	4.34	19	29.49	155	50.42			9.22	2.1	1.3	1.5	23	2	221	.14	8	1.7	0.6	15	KON	
16	19	2	43.40	19	21.92	155	29.07		9.66	1.9	1.9	1.7	41	1	41	.11	3	0.3	0.6	29	KAO	
16	2357	45.21	19	21.82	155	4.11			8.32	1.7	1.2	1.5	32	5	93	.12	4	0.5	0.5	30	SF5	
17	1	7	16.78	20	17.38	155	32.27		25.38	3.1	3.1	2.7	55	7	265	.12	31	0.6	1.5	53	KEA	
17	812	31.50	19	19.70	155	7.81			7.94		2.2	1.8	45	8	97	.11	4	0.4	0.4	40	SF4	
17	1736	50.53	19	26.35	155	16.04			25.69	1.7	1.6	1.6	44	6	92	.09	3	0.7	0.8	31	DEP	
17	2333	44.59	20	5.59	156	4.88			36.05		1.9	1.8	44	7	277	.11	32	0.9	0.8	40	KOH	
18	248	22.03	19	18.07	155	26.31			10.07	1.9	1.7	1.6	47	6	56	.16	7	0.4	0.5	44	LSW	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72			14.23	2.5	2.2	1.5	19	5	139	.11	2	1.1	0.6	1	DEP L	
18	1553	45.76	19	25.42	155	15.72																

ORIGIN TIME		LAT N		LON W		DEPTH		AMP		DUR		CD		GAP		RMS		MIN		ERH		ERZ		NO		
YEAR	MON	DA	HRMN	SEC	DEG	MIN	DEG	MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	MIN	DIS	KM	FM	RMK				
1989	MAY	23	2051	26.26	19	26.37	155	14.31	10.54	1.9	1.7	1.4	19	4	238	.14	3	1.3	0.7	1	INT	L				
		23	23	9	19.01	19	26.50	155	14.07	1.89	2.1	2.6	1.7	21	5	228	.17	3	0.6	0.9	16	SNC	L			
		23	2317	23.35	19	24.89	155	16.39	8.43	2.1	1.9	1.5	21	5	101	.15	1	0.9	0.5	16	INT	L				
		23	2340	4.38	19	24.69	155	16.01	8.97	1.8	1.6	1.2	21	5	101	.12	2	0.8	0.5	16	INT	L				
		24	223	26.19	19	25.03	155	16.67	6.97	2.1	2.3	1.6	18	2	98	.17	1	0.8	0.6	16	INT	L				
		24	342	22.29	19	24.80	155	15.54	10.66	2.6	2.9		22	6	115	.14	2	1.1	0.6	16	INT	L				
		24	352	39.79	19	26.34	155	14.60	9.81	2.3	2.5	1.6	20	4	212	.11	3	1.0	0.6	16	INT	L				
		24	5	39.90	19	12.53	155	29.33	8.78	2.6	2.3	2.2	48	5	125	.14	5	0.4	0.3	45	LSW					
		24	514	10.36	19	24.22	155	17.70	7.61	2.0	1.6	1.4	17	2	57	.14	2	0.7	0.9	16	INT	L				
		24	644	35.35	19	26.67	155	16.27	11.28	2.1	2.2	1.4	21	5	156	.12	2	1.1	0.5	16	INT	L				
		24	8	41.68	19	24.48	155	18.02	9.18	2.3	2.6	1.8	22	6	59	.16	2	0.8	0.7	16	INT	L				
		24	854	25.55	19	29.21	155	26.24	5.75	2.2	1.6	1.5	46	13	66	.12	5	0.3	0.9	33	KAO	L				
		24	956	20.86	19	24.68	155	16.10	6.43	2.2	2.5	1.6	17	1	100	.10	2	0.6	0.8	16	INT	L				
		24	1140	52.34	19	25.42	155	17.90	8.47	2.3	2.4	1.6	17	7	85	.11	1	0.8	0.4	9	INT	L				
		24	14	3	33.91	19	25.63	155	16.32	12.01	2.1	2.2	1.6	19	7	124	.05	2	1.0	0.8	13	INT	L			
		24	1434	24.91	19	24.56	155	16.43	12.40	2.5	2.8	1.8	19	6	90	.08	1	1.2	0.6	14	INT	L				
		24	1717	35.94	19	25.95	155	17.18	11.47	2.5	2.7	1.3	18	6	101	.09	1	1.1	0.6	1	INT	L				
		24	2010	37.11	19	25.04	155	19.43	6.39	2.4	1.8	1.5	31	6	68	.09	3	0.3	0.6	23	KAO					
		24	2151	3.68	19	25.31	155	15.77	12.57	2.6	3.0	1.8	22	4	133	.10	2	1.0	0.5	19	INT	L				
		24	2244	42.04	19	23.59	155	16.16	11.24	2.2	2.0	1.1	19	4	111	.11	1	0.9	0.8	16	INT	L				
		25	033	13.00	19	24.55	155	17.22	11.38	2.6	2.8	1.7	18	4	56	.12	1	1.0	0.5	15	INT	L				
		25	2	6	48.96	19	25.89	155	14.62	10.13	2.0	1.7	1.3	17	2	201	.18	2	1.5	1.1	16	INT	L			
		25	343	50.08	19	25.49	155	15.89	4.91	2.3	2.5	1.7	15	0	136	.14	2	0.7	1.1	15	SNC	L				
		25	514	39.82	19	19.92	155	21.75	28.49	2.1	1.8	1.8	46	6	78	.13	3	0.6	0.7	41	DEP					
25	7	31.17	19	24.63	155	17.57	11.03	2.3	1.9	1.3	17	3	54	.09	1	0.8	0.8	14	INT	L						
25	935	27.05	19	24.88	155	15.64	8.84	2.6	3.2	1.7	20	4	117	.11	2	0.8	0.5	16	INT	L						
25	941	56.23	19	25.60	155	14.92	11.14	1.9	1.7	1.5	15	8	185	.14	2	1.5	0.6	9	INT	L						
25	947	33.92	19	24.07	155	12.69	11.35	2.2	1.7	1.4	15	9	306	.06	3	1.3	0.6	9	SF2	L						
25	10	2	23.19	19	23.05	155	24.90	13.41	1.8	1.4	1.6	37	6	38	.11	4	0.4	0.5	31	DML						
25	1030	3.31	19	25.53	155	15.21	11.80	2.6	2.8	1.8	20	12	166	.13	2	1.1	0.8	12	INT	L						
25	1143	7.89	19	20.48	155	15.85	8.91	2.2	2.1	1.4	16	8	278	.09	6	1.3	1.4	10	SF1	L						
25	1221	8.64	19	22.80	155	25.55	9.82	1.8	1.2	1.4	28	5	52	.09	4	0.4	0.7	23	KAO							
25	13	7	13.78	19	23.86	155	15.57	9.26	2.2	1.9	1.5	20	7	75	.18	2	1.3	0.7	14	INT	L					
25	1641	33.58	19	25.39	155	15.97	12.17	2.4	2.8	1.6	16	6	198	.08	2	1.8	0.6	3	INT	L						
25	1914	49.04	19	19.19	155	8.97	7.30	1.6	1.2	1.5	27	2	91	.09	4	0.5	0.9	20	SF4							
25	20	2	9.24	19	25.13	155	14.36	11.36	2.3	2.3	1.6	17	3	193	.09	1	1.4	0.5	1	INT	L					
25	2247	30.34	19	16.27	155	26.92	8.75		1.4	1.5	36	3	124	.14	6	0.5	0.6	33	LSW							
25	2249	24.71	19	24.52	155	16.18	9.95	2.2	2.3	1.5	17	3	92	.14	1	1.0	0.6	16	INT	L						
26	146	14.24	19	25.88	155	15.39	7.90	2.4		1.7	19	3	172	.14	3	1.0	0.8	16	INT	L						
26	147	22.43	19	25.54	155	14.30	8.73	2.4	2.7	1.7	17	3	203	.11	2	1.1	0.8	16	INT	L						
26	157	45.62	19	25.87	155	16.02	7.45	1.9	1.8	1.3	18	4	144	.13	2	0.9	0.6	15	INT	L						
26	211	18.25	19	25.61	155	14.94	3.33	1.6	1.5	1.2	18	3	185	.10	2	0.4	0.5	16	SNC	L						
26	238	16.30	19	24.40	155	15.89	10.64	2.0	1.7	1.3	19	4	91	.11	2	0.9	0.6	16	INT	L						
26	335	3.42	19	25.42	155	14.48	9.73	2.3	2.6	1.5	20	5	196	.11	1	1.1	0.7	16	INT	L						
26	432	21.59	19	24.55	155	15.61	9.70	1.9	2.0	1.4	20	5	100	.08	2	0.8	0.4	16	INT	L						

YEAR	MON	DA	HRMN	SEC	LAT N	DEG	MIN	DEG	AMP	DUR	CD	MAG	MAG	NR	NS	DEG	RMS	MIN	ERH	ERZ	NO	KM	FM	RMK	
1989	MAY	26	540	13.41	19	26.14	155	14.06	11.29	2.0	1.9	1.4	18	3	221	.12	3	1.2	0.6	16	INT	L			
		26	713	57.48	19	23.37	155	16.64	7.99	2.1	1.8	1.5	19	4	54	.07	1	0.6	0.6	15	INT	L			
		26	914	26.60	19	25.37	155	16.78	9.05	1.9	2.0	1.2	16	3	160	.11	1	1.0	0.4	16	INT	L			
		26	13	2	42.57	19	23.98	155	16.12	9.51	2.5	2.3	1.8	20	5	74	.11	1	0.8	0.5	16	INT	L		
		26	13	4	11.38	19	24.62	155	16.12	10.50	2.3	1.9	1.6	19	4	88	.12	1	0.8	0.8	16	INT	L		
		26	1550	0.35	19	23.96	155	17.23	10.58	2.4	2.3	1.6	18	3	62	.15	1	1.0	1.0	16	INT	L			
		26	1952	51.75	19	18.14	155	14.80	7.64		1.2	1.5	33	4	116	.12	3	0.5	0.5	32	SF1				
		26	2051	20.86	19	17.01	155	58.35	40.69	3.8	4.2	3.6	55	8	251	.11	11	0.7	0.9	50	KON	F			
		26	2317	41.82	19	24.54	155	15.60	10.58	2.5		1.7	18	3	100	.12	2	1.0	0.6	16	INT	L			
		27	2	3	12.49	19	18.62	155	13.60	9.33	2.7	2.6	2.9	51	6	72	.11	3	0.4	0.3	50	SF2			
		27	257	42.10	19	13.68	155	29.97	6.67		1.3	1.5	39	5	71	.18	3	0.4	0.7	35	LSW				
		27	654	10.86	19	25.12	155	16.65	7.15	2.3	2.6	1.3	18	3	101	.16	1	0.9	0.5	15	INT	L			
		27	1121	29.71	19	58.57	155	20.37	9.18	1.1	2.0	1.9	29	5	253	.12	10	0.8	0.7	26	KEA				
		27	1238	15.20	19	27.57	155	49.56	9.39		1.3	1.1	20	4	120	.14	8	0.7	1.5	16	KON				
		27	1246	48.70	19	24.87	155	16.58	11.16	1.9	1.7	1.3	20	5	96	.12	1	1.0	0.4	16	INT	L			
		27	1729	31.90	19	49.01	155	48.44	31.53		1.8	1.5	22	2	234	.10	15	1.9	1.1	21	HUA				
		27	21	8	33.84	19	24.78	155	19.70	6.93	2.0	1.6	1.3	34	8	61	.13	2	0.3	0.5	26	KAO			
		27	23	4	8.88	19	25.35	155	14.41	9.24	2.3	2.3	1.6	18	3	196	.11	1	1.1	0.8	15	INT	L		
		27	2322	9.12	19	26.16	155	13.50	7.61	1.9	1.5	1.3	17	3	234	.15	3	1.1	0.8	15	GLN	L			
		28	010	18.34	19	22.02	155	20.24	8.77	2.1	1.9	1.2	14	3	254	.09	6	0.7	1.2	1	KAO	L			
		28	046	23.03	19	25.50	155																		

# 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	LON W	DEPTH		AMP	DUR	CD	GAP			RMS	MIN	ERH	ER2	NO
			HR	MM			KM	MAG				NR	NS	DEG					
1989	JUN	2	944	51.57	19 24.87	155	16.32	8.07	1.6	1.2	12	1	132	.11	1	1.0	1.1	1	INT L
		2	949	19.78	19 25.06	155	15.23	14.76	2.3	2.2	1.5	14	3	140	.09	2	1.3	0.9	5 DEF L
		2	951	40.35	19 20.39	155	8.96	6.93	1.8	1.7	1.7	38	4	70	.11	3	0.5	0.8	30 SF4 L
		2	1037	9.99	19 23.90	155	19.87	11.11	2.3	2.2	1.4	11	2	138	.12	0	1.4	1.2	1 KAO L
		2	1253	9.77	19 25.38	155	30.63	9.59	2.0	1.6	1.5	31	3	44	.08	7	0.3	0.9	22 KAO
		2	1648	27.15	19 23.37	155	14.50	10.90	2.7	2.7	1.8	18	5	101	.09	2	1.0	0.9	15 INT L
		2	1932	24.91	19 25.75	155	16.96	6.67	1.9	1.8	1.3	20	6	106	.23	1	0.8	0.9	14 INT L
		2	2035	47.35	19 24.30	155	16.20	13.12	2.1	1.9	1.4	18	8	84	.13	1	1.1	0.6	11 DEF L
		2	2242	25.01	19 21.61	155	3.47	7.94	1.2	1.5	33	4	99	.13	3	0.5	0.7	29 SF5	
		3	044	15.38	19 22.89	155	19.40	11.11	2.4	2.6	1.5	16	5	149	.17	4	1.0	1.6	13 KAO L
		3	358	3.26	19 25.48	155	15.48	8.19	2.1	2.2	1.5	17	6	152	.10	2	0.7	0.7	12 INT L
		3	634	10.21	19 25.98	155	17.70	9.70	2.5	3.0	1.8	24	9	84	.16	1	0.7	0.9	16 INT L
3	7	53.25	19 24.46	155	19.23	10.57	2.2	3.4	1.5	16	5	120	.13	3	0.8	1.1	11 KAO L		
3	818	21.04	19 26.19	155	15.76	10.45	2.1	2.6	1.7	19	7	154	.14	3	1.1	0.8	11 INT L		
3	1244	23.31	19 26.14	155	16.36	10.10	2.3	2.1	1.5	16	5	137	.08	3	0.9	0.6	13 INT L		
3	1527	22.87	19 23.70	155	17.66	8.44	2.1	2.2	1.5	16	7	124	.12	1	0.9	0.7	11 INT L		
3	1937	10.79	19 24.82	155	17.24	9.69	2.4	2.9	1.7	26	13	106	.18	0	1.2	0.7	13 INT L		
3	2053	31.58	19 26.45	155	16.12	11.15	2.1	2.2	1.6	21	8	189	.19	3	1.4	0.8	15 INT L		
3	2215	43.43	19 15.96	155	28.70	8.81	1.7	1.4	1.5	28	6	63	.12	3	0.4	0.7	25 LSW		
3	2241	31.90	19 24.15	155	15.97	8.87	1.9	2.0	1.3	15	4	80	.11	1	0.8	0.9	11 INT L		
3	2328	48.76	19 19.81	155	7.08	6.69	1.6	1.7	1.5	33	5	111	.10	5	0.5	0.9	28 SF4		
4	1	53.41	19 25.20	155	17.70	7.28	1.9	2.0	1.3	13	3	79	.12	0	1.0	0.8	9 INT L		
4	218	58.46	19 23.68	155	16.54	9.56	2.4	2.7	1.7	17	7	678	.13	0	0.8	0.9	12 INT L		
4	226	13.42	19 22.03	155	20.81	7.83	2.0	1.6	1.4	11	4	276	.10	4	1.1	2.0	1 KAO L		
4	248	51.23	19 23.71	155	17.81	0.03	1.6	2.1	1.4	4	8	2109	.16	2	1.3	0.5	0 SF4		
4	254	51.23	19 23.71	155	17.81	0.03	1.6	2.1	1.4	4	8	2109	.16	2	1.3	0.5	0 SF4		

# 1989 HVO EARTHQUAKE SUMMARY LIST

ORIGIN TIME				LAT N	LONG W	DEPTH	AMP	DUR	CD	GAP	RMS	MIN	ERH	ERZ	NO																																																																																																																																																																							
YEAR	MON	DA	HHRN	SEC	DEG MIN	DEG MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM																																																																																																																																																																							
1989	MAY	30	9	6	26.49	20	4.54	156	12.75	0.01	1.9	2.0	25	2	326	.23	58	5.9	1.3	18	KOH *																																																																																																																																																																	
																						30	944	8.58	19	25.33	155	15.28	9.04	2.6	2.9	1.6	19	4	163	.12	2	1.0	0.8	16	INT L																																																																																																																																													
																																										30	10	30.43	19	25.38	155	16.04	11.52	2.0	1.8	1.4	13	5	202	.13	2	1.5	1.0	1	INT L																																																																																																																									
																																																														30	10	8.38	19	25.61	155	16.06	9.72	1.8	1.7	1.3	8	2	192	.04	3	1.3	0.7	0	INT L																																																																																																					
																																																																																		30	1222	31.63	19	26.80	155	15.93	8.31	1.8	1.9	1.3	10	4	223	.14	4	1.5	1.1	1	INT L																																																																																	
																																																																																																						30	13	6	57.60	19	20.83	155	22.09	11.59	1.8	1.6	1.4	29	4	102	.09	2	0.5	0.7	18	SWR																																																												
																																																																																																																											30	1342	36.45	19	26.09	155	17.83	13.87	2.6	2.8	1.6	13	3	92	.13	1	2.0	1.1	1	DEF L																																								
																																																																																																																																															30	1736	57.51	19	25.13	155	16.18	4.07	1.8	2.3	1.8	6	1	163	.03	1	0.8	0.8	0	SNG L																				
																																																																																																																																																																			30	2019	2.24	19	21.44	155	2.89	8.81	2.9	3.1	3.2	53	5	121	.11	3	0.5	0.4	45	SF5
1989	MAY	30	9	6	26.49	20	4.54	156	12.75	0.01	1.9	2.0	25	2	326	.23	58	5.9	1.3	18	KOH *																																																																																																																																																																	
																						30	944	8.58	19	25.33	155	15.28	9.04	2.6	2.9	1.6	19	4	163	.12	2	1.0	0.8	16	INT L																																																																																																																																													
																																										30	10	30.43	19	25.38	155	16.04	11.52	2.0	1.8	1.4	13	5	202	.13	2	1.5	1.0	1	INT L																																																																																																																									
																																																														30	10	8.38	19	25.61	155	16.06	9.72	1.8	1.7	1.3	8	2	192	.04	3	1.3	0.7	0	INT L																																																																																																					
																																																																																		30	1222	31.63	19	26.80	155	15.93	8.31	1.8	1.9	1.3	10	4	223	.14	4	1.5	1.1	1	INT L																																																																																	
																																																																																																						30	13	6	57.60	19	20.83	155	22.09	11.59	1.8	1.6	1.4	29	4	102	.09	2	0.5	0.7	18	SWR																																																												
																																																																																																																											30	1342	36.45	19	26.09	155	17.83	13.87	2.6	2.8	1.6	13	3	92	.13	1	2.0	1.1	1	DEF L																																								
																																																																																																																																															30	1736	57.51	19	25.13	155	16.18	4.07	1.8	2.3	1.8	6	1	163	.03	1	0.8	0.8	0	SNG L																				
																																																																																																																																																																			30	2019	2.24	19	21.44	155	2.89	8.81	2.9	3.1	3.2	53	5	121	.11	3	0.5	0.4	45	SF5
1989	MAY	30	9	6	26.49	20	4.54	156	12.75	0.01	1.9	2.0	25	2	326	.23	58	5.9	1.3	18	KOH *																																																																																																																																																																	
																						30	944	8.58	19	25.33	155	15.28	9.04	2.6	2.9	1.6	19	4	163	.12	2	1.0	0.8	16	INT L																																																																																																																																													
																																										30	10	30.43	19	25.38	155	16.04	11.52	2.0	1.8	1.4	13	5	202	.13	2	1.5	1.0	1	INT L																																																																																																																									
																																																														30	10	8.38	19	25.61	155	16.06	9.72	1.8	1.7	1.3	8	2	192	.04	3	1.3	0.7	0	INT L																																																																																																					
																																																																																		30	1222	31.63	19	26.80	155	15.93	8.31	1.8	1.9	1.3	10	4	223	.14	4	1.5	1.1	1	INT L																																																																																	
																																																																																																						30	13	6	57.60	19	20.83	155	22.09	11.59	1.8	1.6	1.4	29	4	102	.09	2	0.5	0.7	18	SWR																																																												
																																																																																																																											30	1342	36.45	19	26.09	155	17.83	13.87	2.6	2.8	1.6	13	3	92	.13	1	2.0	1.1	1	DEF L																																								
																																																																																																																																															30	1736	57.51	19	25.13	155	16.18	4.07	1.8	2.3	1.8	6	1	163	.03	1	0.8	0.8	0	SNG L																				
																																																																																																																																																																			30	2019	2.24	19	21.44	155	2.89	8.81	2.9	3.1	3.2	53	5	121	.11	3	0.5	0.4	45	SF5
1989	MAY	30	9	6	26.49	20	4.54	156	12.75	0.01	1.9	2.0	25	2	326	.23	58	5.9	1.3	18	KOH *																																																																																																																																																																	
																						30	944	8.58	19	25.33	155	15.28	9.04	2.6	2.9	1.6	19	4	163	.12	2	1.0	0.8	16	INT L																																																																																																																																													
																																										30	10	30.43	19	25.38	155	16.04	11.52	2.0	1.8	1.4	13	5	202	.13	2	1.5	1.0	1	INT L																																																																																																																									
																																																														30	10	8.38	19	25.61	155	16.06	9.72	1.8	1.7	1.3	8	2	192	.04	3	1.3	0.7	0	INT L																																																																																																					
																																																																																		30	1222	31.63	19	26.80	155	15.93	8.31	1.8	1.9	1.3	10	4	223	.14	4	1.5	1.1	1	INT L																																																																																	
																																																																																																						30	13	6	57.60	19	20.83	155	22.09	11.59	1.8	1.6	1.4	29	4	102	.09	2	0.5	0.7	18	SWR																																																												
																																																																																																																											30	1342	36.45	19	26.09	155	17.83	13.87	2.6	2.8	1.6	13	3	92	.13	1	2.0	1.1	1	DEF L																																								
																																																																																																																																															30	1736	57.51	19	25.13	155	16.18	4.07	1.8	2.3	1.8	6	1	163	.03	1	0.8	0.8	0	SNG L																				
																																																																																																																																																																			30	2019	2.24	19	21.44	155	2.89	8.81	2.9	3.1	3.2	53	5	121	.11	3	0.5	0.4	45	SF5
1989	MAY	30	9	6	26.49	20	4.54	156	12.75	0.01	1.9	2.0	25	2	326	.23	58	5.9	1.3	18	KOH *																																																																																																																																																																	
																						30	944	8.58	19	25.33	155	15.28	9.04	2.6	2.9	1.6	19	4	163	.12	2	1.0	0.8	16	INT L																																																																																																																																													
																																										30	10	30.43	19	25.38	155	16.04	11.52	2.0	1.8	1.4	13	5	202	.13	2	1.5	1.0	1	INT L																																																																																																																									
																																																														30	10	8.38	19	25.61	155	16.06	9.72	1.8	1.7	1.3	8	2	192	.04	3	1.3	0.7	0	INT L																																																																																																					
																																																																																		30	1222	31.63	19	26.80	155	15.93	8.31	1.8	1.9	1.3	10	4	223	.14	4	1.5	1.1	1	INT L																																																																																	
																																																																																																						30	13	6	57.60	19	20.83	155	22.09	11.59	1.8	1.6	1.4	29	4	102	.09	2	0.5	0.7	18	SWR																																																												
																																																																																																																											30	1342	36.45	19	26.09	155	17.83	13.87	2.6	2.8	1.6	13	3	92	.13	1	2.0	1.1	1	DEF L																																								
																																																																																																																																															30	1736	57.51	19	25.13	155	16.18	4.07	1.8	2.3	1.8	6	1	163	.03	1	0.8	0.8	0	SNG L																				
																																																																																																																																																																			30	2019	2.24	19	21.44	155	2.89	8.81	2.9	3.1	3.2	53	5	121	.11	3	0.5	0.4	45	SF5
1989	MAY	30	9	6	26.49	20	4.54	156	12.75	0.01	1.9	2.0	25	2	326	.23	58	5.9	1.3	18	KOH *																																																																																																																																																																	
																						30	944	8.58	19	25.33	155	15.28	9.04	2.6	2.9	1.6	19	4	163	.12	2	1.0	0.8	16	INT L																																																																																																																																													
																																										30	10	30.43	19	25.38	155	16.04	11.52	2.0	1.8	1.4	13	5	202	.13	2	1.5	1.0	1	INT L																																																																																																																									
																																																														30	10	8.38	19	25.61	155	16.06	9.72	1.8	1.7	1.3	8	2	192	.04	3	1.3	0.7	0	INT L																																																																																																					
																																																																																		30	1222	31.63	19	26.80	155	15.93	8.31	1.8	1.9	1.3	10	4	223	.14	4	1.5	1.1	1	INT L																																																																																	
																																																																																																						30	13	6																																																																														

## 1989 HVO EARTHQUAKE SUMMARY LIST

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ORIGIN TIME		LAT N		LON W		DEPTH AMP DUR		CD		GAP RMS MIN ERH		ERZ NO						
YEAR	MON	DA	HRMN	SEC	DEG MIN	DEG MIN	KM	MAG	MAG NR	NS	DEG	SEC	DIS	RM	KN	FM	RMK	
1989	JUN	6	041	44.14	19 24.92	155 17.09	9.28	2.3	2.6	1.7	18	4	88	.13	0	0.9	0.5 15 INT L	
		6	120	41.85	20 12.62	156 5.87	23.37	2.3	2.2	3.4	4	298	.15	34	1.1	2.6	30 KOH	
		6	531	53.22	19 26.14	155 13.60	9.48	2.2	1.6	1.8	4	266	.13	3	1.3	0.7 15 GLN L		
		6	846	6.63	19 24.78	155 17.65	9.65	2.5	2.8	1.7	19	5	76	.12	1	0.9	0.6 16 INT L	
		6	1759	36.67	19 24.93	155 16.48	10.20	2.5	3.0	1.7	17	2	99	.11	1	0.8	1.0 2 INT L	
		6	2048	16.09	19 25.16	155 17.07	13.21	2.6	3.0	1.4	19	3	92	.14	1	0.9	1.1 3 DEP L	
		7	217	43.73	19 24.90	155 16.00	12.21	2.5	2.9	1.7	17	3	110	.08	2	0.9	0.5 16 INT L	
		7	631	0.44	19 19.47	155 26.38	10.93	1.4	1.2	3.4	4	56	.13	6	0.4	0.6 31 KAO		
		7	1246	51.16	19 26.86	155 15.59	8.25	2.4	3.0	1.9	21	6	198	.15	3	0.9	0.8 16 INT L	
		7	1750	43.11	19 22.93	155 18.29	5.47	2.4	2.8	1.7	17	3	105	.26	3	0.8	2.0 1 INT L	
2013	JUN	7	2013	22.74	19 26.02	155 12.64	7.56	2.1	2.1	1.3	12	4	253	.09	4	0.9	2.5 4 GLN L	
		7	2015	46.51	19 23.74	155 15.24	3.25	1.7	1.1	1.5	22	6	66	.10	2	0.3	0.4 14 SEC L	
		7	2243	4.67	19 24.50	155 16.62	10.43	2.1	2.1	1.2	19	3	85	.15	1	0.9	0.8 16 INT L	
		7	2247	23.66	19 21.69	155 1.46	7.66	1.8	2.0	4.3	4	159	.12	4	0.5	0.4 41 SFS		
		8	412	29.48	19 26.54	155 28.76	10.07	1.6	1.3	1.4	36	6	61	.10	7	0.3	0.6 32 KAO	
		8	855	41.62	19 25.46	155 15.63	7.15	1.9	1.7	1.3	21	5	145	.12	3	0.8	0.6 16 INT L	
		8	9	11.25	19 20.70	155 3.43	7.05	1.7	1.9	1.8	41	5	97	.13	2	0.3	0.4 40 SFS	
		8	10	1	5.47	19 20.67	155 17.45	29.07	1.8	1.5	27	2	65	.09	1	0.9	1.3 18 DEP	
		8	11	0	16.42	19 20.39	155 6.58	7.28	2.1	1.9	21	45	9	106	.10	6	0.4	0.8 33 SFS
		8	1252	35.18	19 25.91	155 13.20	8.26	2.5	2.9	1.7	13	3	200	.11	3	1.2	1.7 2 SF2 L	
2013	JUN	8	1345	47.71	19 24.14	155 16.23	9.43	2.1	2.5	1.7	9	0	116	.12	1	1.4	2.0 0 INT L	
		8	1733	56.53	19 18.40	155 13.55	7.77	1.5	1.2	1.4	20	1	86	.06	3	0.5	1.0 19 SF2	
		8	2222	4.96	19 11.70	155 28.53	8.40	2.3	2.0	2.1	52	8	91	.19	4	0.4	0.5 43 LSW	
		9	057	2.54	20 14.05	155 41.32	27.65	1.8	1.6	2.5	5	277	.10	15	1.2	0.6 21 KOH		
		9	139	48.66	19 14.22	156 16.59	35.30	1.8	1.9	1.9	4	289	.09	43	1.4	2.5	16 KON	
		9	2	8	4.86	19 23.52	155 17.95	8.88	2.2	2.5	1.5	16	3	84	.13	2	0.8	1.0 16 INT L
		9	238	41.87	19 53.22	155 33.10	21.68	1.4	1.6	3.2	5	130	.10	12	0.8	0.8 28 KEA		
		9	247	44.54	19 22.07	155 1.79	7.36	2.0	1.4	2.0	45	5	146	.11	4	0.6	0.5 40 SFS	
		9	739	53.34	19 25.39	155 17.13	8.71	2.0	1.6	1.4	22	6	95	.13	1	0.8	0.4 16 INT L	
		9	1247	43.13	19 23.03	155 14.94	3.34	2.1	1.6	1.5	25	6	65	.11	2	0.3	0.3 11 SEC	
2013	JUN	9	1252	40.06	19 25.17	155 17.07	12.10	2.2	2.0	1.4	15	3	92	.13	1	1.6	1.1 1 INT L	
		9	1344	58.52	19 28.38	155 14.25	10.10	2.1	2.0	1.3	15	4	266	.13	4	1.7	1.9 3 GLN L	
		9	1437	47.71	19 23.46	155 19.00	30.41	1.8	1.7	1.7	41	8	32	.11	4	0.6	0.7 19 DEP	
		9	1558	8.58	19 23.88	155 18.47	9.48	2.4	2.3	1.6	20	5	67	.18	2	0.8	1.0 15 INT L	
		9	1559	46.81	19 24.57	155 16.26	7.73	2.1	1.8	1.5	17	4	93	.08	1	0.8	0.5 15 INT L	
		9	16	9	10.76	19 23.99	155 17.66	7.40	2.1	2.0	1.6	14	0	85	.13	2	0.8	1.6 16 INT L
		9	1636	14.84	19 17.04	155 27.41	10.02	1.4	1.1	2.6	5	54	.13	6	0.4	0.7 23 LSW		
		9	1639	15.42	19 24.00	155 17.07	9.09	2.3	2.5	1.5	19	4	70	.17	1	0.8	0.9 16 INT L	
		9	2235	19.67	19 24.81	155 17.02	9.69	2.2	1.7	1.6	18	2	83	.10	0	0.7	1.2 16 INT L	
		10	246	6.33	19 26.12	155 14.34	10.04	2.4	2.3	1.7	19	4	214	.13	3	1.2	0.8 16 INT L	
2013	JUN	10	527	59.37	19 26.01	155 16.02	8.39	2.1	1.9	1.3	19	4	148	.10	3	0.9	0.5 15 INT L	
		10	7	12.49	19 24.98	155 16.12	6.21	2.1	1.7	1.4	19	4	110	.14	2	0.8	0.6 16 INT L	
		10	17	9	18.15	19 18.47	155 22.49	9.82	1.8	1.7	1.5	46	8	101	.15	4	0.4	0.5 38 SFR
		10	1720	7.71	19 24.37	155 15.88	13.31	2.3	2.4	1.5	21	5	89	.10	2	0.9	0.5 16 DEP L	
		10	2243	41.76	19 25.21	155 15.72	11.91	2.1	2.2	1.4	20	4	130	.13	2	1.1	0.5 16 INT L	

## 1989 HVO EARTHQUAKE SUMMARY LIST

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ORIGIN TIME				LAT N		LON W		DEPTH AMP DUR				GAP RMS MIN ERH				ER2 NO			
YEAR	MON	DA	HRMN	SEC	DEG MIN	DEG MIN	DEG MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	RM FM RMK		
1989	JUN	10	2358	28.42	19	22.59	155 28.09	9.48	1.2	1.4	36	5	42	.13	1	0.4	0.5 31 KAO		
		11	449	19.11	19	24.60	155 17.81	6.06	1.7	1.8	1.2	8	1	104	.03	2	1.3	0.8 1 INT L	
		11	8	1	8.40	19	25.25	155 18.72	6.26	1.2	1.1	25	5	75	.11	2	0.4	0.7 13 INT L	
		11	1031	18.48	19	27.86	155 16.39	11.68	2.1	2.5	1.3	12	3	221	.11	1	2.3	0.9 1 INT L	
		11	1445	19.24	19	17.70	155 16.67	7.81	1.8	2.0	1.7	42	8	143	.11	3	0.4	0.6 25 SFL	
		11	1922	54.00	19	24.44	155 15.88	10.78	2.1	2.5	1.7	12	2	135	.19	2	2.2	1.8 4 INT L	
		11	20	4	11.67	19	25.21	155 16.83	9.30	1.8	1.9	1.3	14	2	99	.09	1	1.1	0.9 1 INT L
		12	055	57.01	19	23.61	155 16.83	6.75	1.6	2.1	0.9	15	3	87	.13	1	0.8	0.8 15 INT L	
		12	5	7	22.74	19	23.46	155 16.64	9.71	2.1	1.9	2.0	49	5	33	.12	4	0.3	0.4 44 KAO
		12	835	30.34	19	26.87	155 15.79	11.46	2.2	2.6	1.5	17	5	214	.13	4	1.5	0.6 14 INT L	
		12	1534	36.69	19	26.08	155 35.41	16.78	3.7	4.1		54	5	49	.10	3	0.4	0.7 45 DML F	
12	2242	1.02	19	17.74	155 13.18	8.44	1.5	1.4	1.5	44	8	107	.13	1	0.4	0.4 41 SFL			
13	119	29.73	19	24.49	155 16.45	7.44	2.1	2.4	1.3	17	3	87	.15	1	0.8	0.6 16 INT L			
13	7	0	52.72	19	23.34	155 16.74	11.40	2.1	2.0	1.3	15	2	75	.12	0	0.9	0.9 15 INT L		
13	947	39.27	19	24.94	155 18.22	5.25	1.5	1.7	1.3	11	0	68	.10	1	0.6	1.1 12 INT L			
13	1146	8.03	19	24.83	155 15.75	5.64	2.0	2.1	1.5	14	2	112	.13	2	0.7	0.8 11 INT L			
13	1248	12.92	19	25.29	155 16.22	7.26	2.0	2.1	1.4	14	5	169	.11	2	0.9	0.8 9 INT L			
13	1915	48.30	19	25.31	155 16.44	9.93	2.1	1.7	1.4	22	5	112	.09	1	0.7	0.8 3 INT L			
14	1	8	35.49	19	24.41	155 16.21	8.65	1.8	1.7	1.2	15	1	88	.11	1	0.8	0.9 16 INT L		
14	321	24.87	19	24.52	155 15.14	11.26	2.0	1.7	1.2	18	4	121	.12	1	1.1	0.6 16 INT L			
14	526	7.17	19	24.68	155 16.39	5.11	1.7	1.7	1.3	17	2	93	.13	1	0.6	0.5 16 INT L			
14	1211	4.55	19	23.15	155 17.25	11.06	2.5	2.8	1.7	27	12	63	.17	1	0.8	0.7 17 INT L			
14	1219	44.65	19	26.21	155 12.57	7.76	2.0	1.5	1.4	17	8	296	.09	8	2.1	2.8 9 GLN L			
14	1320	40.47	19	26.32	155 16.80	10.24	2.2	2.3	1.5	16	6	121	.12	2	0.8	0.8 10 INT L			
14	1423	54.98	19	25.70	155 17.08	11.76	1.9	1.9	1.5	14	2	101	.12	1	1.4	1.0 3 INT L			
14	1450	26.05	19	20.50	155 29.60	3.24	1.5	1.3	13	2	93	.11	5	0.6	1.6 11 KAO				
14	1611	14.15	19	23.97	155 16.84	8.98	2.0	2.1	1.4	9	0	90	.06	0	1.2	1.9 2 INT L			
14	17	0	7.95	19	28.40	155 19.23	15.62	2.5		1.8	10	1	230	.13	5	2.0	2.8 1 DML L		
14	1923	11.39	19	27.68	155 14.57	12.61	2.5	2.8	1.7	15	4	251	.13	4	2.8	1.7 1 INT L			
14	21	2	17.89	19	24.86	155 16.61	7.82	2.2	2.6	1.5	20	4	95	.14	1	0.8	0.5 16 INT L		
14	2121	45.55	19	26.68	155 14.30	9.04	2.0	1.7	1.3	16	3	227	.12	4	1.1	0.7 16 INT L			
14	2352	48.16	19	25.53	155 14.90	6.42	2.1	2.0	1.4	20	4	183	.15	2	0.9	0.7 16 INT L			
14	2357	54.30	19	22.48	155 30.05	9.81	1.2	1.3	38	6	88	.13	4	0.4	0.5 33 KAO				
15	0	45.44	19	22.33	155 26.60	10.38	1.2	1.2	34	6	47	.11	2	0.3	0.4 29 KAO				
15	345	11.54	19	23.87	155 16.29	4.10	1.9	1.9	1.4	17	4	100	.11	1	0.5	0.4 16 SEC L			
15	455	20.72	19	19.60	155	9.62	6.48	1.5	1.2	1.5	38	6	90	.11	5	0.4	0.5 37 SFL		
15	559	25.52	19	22.37	155	1.72	8.11	2.1	2.2	2.0	49	8	143	.13	5	0.4	0.3 45 SFL		
15	626	19.10	19	23.96	155	18.11	11.47	2.4	2.4	1.5	18	4	63	.10	2	0.7	0.7 15 INT L		
15	653	31.99	19	24.13	155	17.07	9.62	1.9	1.9	1.3	20	5	72	.16	1	0.9	0.7 16 INT L		
15	10	8	44.42	19	24.11	155	16.75	11.17	2.3	2.5	1.6	24	10	75	.13	0	0.8	0.6 13 INT L	
15	1219	12.07	19	26.17	155	17.01	11.59	2.3	2.2	1.6	20	9	110	.11	2	1.1	0.8 10 INT L		
15	1439	52.69	19	27.77	155	18.10	2.70	1.9	2.1	1.7	11	2	156	.11	2	0.7	0.8 1 SNC L		
15	1522	48.40	19	28.13	155	17.16	7.36	2.0	1.6	1.5	7	3	313	.02	5	2.0	1.6 0 GLN L		
15	19	3	38.44	19	24.53	155	17.72	10.86	2.5	3.2	1.4	13	0	71	.16	2	1.0	1.0 1 INT L	
15	1918	10.95	19	28.16	155	16.53	7.04	2.4	2.5	1.6	13	2	247	.14	1	0.5	2.0 1 GIN L		

# 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	LON W	DEPTH		AMP	DUR	CD	GAP			RMS	MIN	ERH	ERZ	NO		
			HRVN	SEC			KM	MAG				NR	NS	DEG						SEC	DIS
1989	JUN	18	1352	31.24	19 24.51	155	16.59	6.37	1.7	2.2	1.5	9	1	129	.25	1	1.8	2.1	1	INT L	
		18	1613	5.52	19 23.74	155	15.31	12.53	2.6	3.2	1.7	15	4	220	.20	2	1.7	0.9	1	INT L	
		18	18	6	27.03	19 23.75	155	17.27	8.95	2.5		1.7	10	2	202	.13	1	2.3	1.2	2	INT L
		18	19	1	0.40	19 23.35	155	15.57	11.59	1.9	1.7	1.2	14	4	158	.16	2	3.1	1.0	1	INT L
		18	1943	24.14	19 24.10	155	15.78	9.22	2.0	1.9	1.3	11	2	120	.15	1	1.9	1.4	2	INT L	
		18	2138	31.44	19 22.16	155	29.77	9.76		1.2	1.3	30	6	59	.12	4	0.4	0.5	25	KAO	
		18	2140	14.43	19 24.93	155	14.03	8.60	2.3	2.5	1.6	18	4	235	.19	1	1.4	0.8	15	INT L	
		19	056	6.02	19 25.12	155	15.70	9.50	2.6	3.4	1.8	18	4	127	.15	2	1.1	0.6	15	INT L	
		19	120	13.75	19 21.79	155	4.88	8.11	2.4	2.8	2.5	50	7	79	.11	5	0.4	0.3	44	SFS	
		19	133	55.04	19 23.35	155	17.72	11.11	2.2	2.0	1.3	22	7	66	.12	1	0.8	0.7	15	INT L	
19	249	23.71	19 26.24	155	14.82	6.12	1.7	2.1	1.1	15	1	211	.11	3	0.9	0.7	16	INT L			
		19	4	46.01	19 10.24	155	20.77	13.63	2.6	1.5	1.4	26	4	219	.09	9	0.9	0.6	24	DEP	
		19	531	59.16	19 24.96	155	14.68	7.48	2.2	1.5	1.3	23	8	155	.13	1	0.6	0.5	15	INT L	
		19	759	21.74	19 23.93	155	14.42	10.93	2.7	3.0	1.8	17	5	110	.12	1	1.3	0.8	13	INT L	
		19	956	56.25	19 20.03	155	6.76	8.76	3.0	3.1	3.4	50	6	111	.11	5	0.5	0.4	47	SF4	
		19	1051	36.56	19 24.54	155	18.10	7.75	2.1	2.4	1.5	22	9	141	.25	2	1.4	1.0	10	INT L	
		19	1122	37.66	19 16.86	155	14.83	5.57	1.3	1.5	3.1	6	178	.10	2	0.5	0.9	25	SF1		
		19	1259	7.12	19 27.79	155	11.80	4.76	1.8	1.7	1.3	9	3	307	.21	11	2.4	19.7	0	SEC L*	
		19	1510	6.20	19 22.11	155	16.43	3.55	2.4	2.6	1.6	10	2	125	.13	1	0.6	0.8	1	INT L	
		19	1930	6.46	19 25.56	155	15.82	12.03	2.4	2.6	1.7	19	4	141	.12	2	1.1	0.6	3	INT L	
19	22	5	55.88	19 24.76	155	15.74	10.77	2.1	2.3	1.4	16	7	151	.13	2	2.0	0.8	11	INT L		
		20	041	14.48	19 24.99	155	16.37	9.53	2.1	2.2	1.6	22	6	105	.14	1	0.9	0.5	16	INT L	
		20	058	8.79	19 11.82	155	40.96	0.81	2.5	2.1	2.1	50	9	117	.20	9	0.4	0.3	1	LSW	
		20	258	17.26	19 41.55	156	27.07	1.56	1.5	1.8	30	6	282	.15	60	1.2	0.6	29	DIS		
		20	335	9.39	19 24.22	155	16.95	1.60	1.7	1.1	1.1	22	6	75	.12	1	0.3	0.2	17	SSC	
		20	340	37.47	19 24.24	155	18.04	11.44	2.5	2.8	1.6	16	3	60	.11	2	0.8	0.8	16	INT L	
		20	353	2.29	19 25.39	155	16.00	10.06	2.1	2.1	1.4	18	3	129	.13	2	1.1	0.5	15	INT L	
		20	738	23.26	19 25.63	155	15.70	7.45	2.0	2.3	1.3	18	3	149	.09	3	0.8	0.5	16	INT L	
		20	921	16.81	19 23.49	155	16.86	10.44	2.5	2.7	1.7	23	10	49	.16	0	0.8	0.6	15	INT L	
		20	1127	20.81	19 23.88	155	30.11	10.36	2.0	1.8	1.7	36	7	49	.11	5	0.4	0.6	29	KAO	
20	1136	19.79	19 27.02	155	30.18	8.40	1.9	1.2	1.3	27	6	60	.11	6	0.4	0.9	23	KAO			
		20	1532	31.99	19 28.44	155	14.56	18.34	2.6	2.8	1.7	12	3	264	.13	4	2.0	1.7	1	DEP L	
		20	1534	30.63	19 24.12	155	16.12	10.23	2.0	1.6	1.4	11	3	117	.06	1	1.4	0.9	0	INT L	
		20	1822	2.89	19 24.96	155	16.96	6.97	2.0	2.1	1.4	18	1	91	.12	0	0.6	1.1	2	INT L	
		20	2042	2.89	19 27.46	155	17.36	9.28	1.8	1.6	1.2	16	6	132	.10	2	1.0	0.7	11	INT L	
		20	2326	54.62	19 23.49	155	17.36	6.74	1.8	1.7	1.2	18	3	52	.14	1	0.6	0.7	16	INT L	
		20	2136	34.77	19 11.30	155	41.52	0.00	2.3	1.9	1.9	38	5	122	.27	10	0.7	0.7	35	LSW *	
		20	23	3	11	19 25.28	155	14.52	6.15	2.4	3.0	1.7	18	5	192	.14	1	0.7	1.0	16	INT L
		20	23	6	31.99	19 24.01	155	16.96	6.27	2.1	2.2	1.5	20	5	70	.12	1	0.6	0.5	16	INT L
		20	2310	58.00	19 23.99	155	17.36	9.28	1.8	1.6	1.2	16	6	132	.10	2	1.0	0.7	11	INT L	
21	827	45.40	19 25.53	155	17.11	19.20	1.8	1.6	1.2	17	50	10	84	.10	2	0.5	0.4	40	DEP L		
		21	827	45.40	19 25.24	155	17.11	19.20	1.8	1.6	1.2	17	2	93	.11	1	0.8	1.3	15	INT L	
		21	014	18.44	19 23.27	155	17.36	5.21	1.8	1.8	1.3	16	2	101	.10	1	0.5	0.8	16	INT L	
		21	521	21.63	19 23.97	155	15.12	17.34	2.5	2.8	1.7	16	3	160	.11	2	1.5	0.8	16	DEP L	
		21	524	6.41	19 25.00	155	16.54	8.08	1.8	1.7	1.3	13	2	100	.12	1	1.2	0.8	14	INT L	
		21	8	32.73	19 26.53	155	16.38	17.19	2.1	1.7	1.7	50	10	84	.10	2	0.5	0.4	40	DEP L	
		21	827	45.40	19 25.24	155	17.11	19.20	1.8	1.6	1.2	17	2	93	.11	1	0.8	1.3	15	INT L	
		21	827	45.40	19 25.24	155	17.11	19.20	1.8	1.6	1.2	17	2	93	.11	1	0.8	1.3	15	INT L	
		21	827	45.40	19 25.24	155	17.11	19.20	1.8	1.6	1.2	17	2	93	.11	1	0.8	1.3	15	INT L	
		21	827	45.40	19 25.24	155	17.11	19.20	1.8	1.6	1.2	17	2	93	.11	1	0.8	1.3	15	INT L	

## 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	DEG	MIN	ION W	DEPTH AMP		DUR	CD	GAP				RMS	MIN	ERH	ER2 NO		
			HRMN	SEC					KM	MAG			MAG	NR	NS	DEG					SEC	DIS
1989	JUN	15	20	6	50.89	19	25.73	155	16.21	12.17	1.9	1.6	1.2	14	4	132	.15	2	1.9	1.1	2	INT L
		15	2034	35.51	19	23.85	155	18.40	12.50	2.3	2.2	1.5	16	3	97	.11	2	1.1	0.9	16	INT L	
		15	2331	31.76	19	25.10	155	15.79	7.67	2.3	2.2	1.5	14	2	123	.09	2	0.6	0.7	15	INT L	
		15	2331	50.42	19	21.15	155	2.65	6.85	2.1	1.9	2.1	51	7	133	.03	2	0.4	0.5	47	SF5	
	16	018	50.94	19	24.67	155	22.02	10.77	2.3	2.7	2.2	55	8	42	.11	4	0.3	0.3	48	KAO		
	JUL	16	2	5	36.73	19	22.22	155	29.66	9.73	1.6	1.2	1.4	29	2	55	.11	4	0.4	0.8	20	KAO
		16	216	55.10	19	26.46	155	15.97	11.59	2.4	2.7	1.6	14	3	165	.18	3	1.7	1.5	1	INT L	
		16	421	14.73	19	25.08	155	16.91	10.88	2.1	1.6	1.4	21	4	63	.15	0	0.8	0.8	2	INT L	
		16	67	5.74	19	24.67	155	16.55	8.07	2.0	1.7	1.5	19	3	91	.13	1	0.8	0.6	16	INT L	
	AUG	16	8	4	51.39	19	18.89	155	15.26	6.71	1.7	1.3	1.4	30	2	95	.12	4	0.4	1.0	19	SF1
		16	938	19.95	19	22.30	155	4.66	8.11	2.3	2.3	2.5	43	5	82	.10	4	0.4	0.5	24	SF5	
		16	950	51.52	19	25.24	155	16.45	7.04	2.3	2.4	1.0	13	0	109	.12	1	0.9	1.5	1	INT L	
		16	1023	39.00	19	24.64	155	16.20	6.36	1.8	1.4	1.4	36	2	96	.10	1	0.6	0.8	15	INT L	
	SEP	16	1356	48.10	19	23.01	155	14.66	4.03	2.3	2.2	1.5	9	1	117	.13	2	0.7	1.0	0	SEC L	
		16	1456	12.87	19	26.31	155	13.87	2.48	2.1	2.0	1.6	19	4	228	.19	3	0.7	1.1	16	GLN L	
		16	19	9	30.63	19	25.11	155	15.57	9.20	2.5	2.7	1.8	18	3	131	.14	2	1.0	0.5	16	INT L
16		1917	2.57	19	22.89	155	18.30	8.72	2.0	1.7	1.4	17	4	105	.13	3	0.7	1.1	16	INT L		
OCT	16	2951	6.19	19	24.77	155	14.94	7.31	2.1	1.8	1.5	19	3	126	.16	1	0.9	0.7	16	INT L		
	16	3130	19.31	19	25.06	155	14.47	11.72	2.4	2.1	1.6	19	5	197	.13	1	1.3	0.7	16	INT L		
	16	2146	9.95	19	29.99	155	7.09	61.25	2.8	1.4	1.7	5	289	.13	17	3.7	1.6	12	DEP			
	16	2352	6.88	19	24.10	155	17.52	9.11	2.3	2.1	1.5	20	6	57	.14	2	0.8	0.8	15	INT L		
	17	221	7.87	19	47.49	155	47.06	5.47	2.2	2.3		20	0	249	.16	13	2.3	1.5	26	HUA		
	17	339	13.49	19	19.10	155	12.41	1.68	1.4	1.1		23	1	94	.15	4	0.5	1.5	24	SSF		
	17	759	48.85	18	57.01	155	11.20	16.95	2.0	2.0	4.1	6	243	.16	37	0.9	16.6	38	LOI *			
	17	819	43.27	19	24.43	155	13.89	10.49	2.2	2.5	1.5	17	3	256	.13	1	1.2	0.7	15	SF2 L		
NOV	17	9	4	36.82	19	25.12	155	17.18	14.88	2.3	2.3	1.6	20	4	89	.18	1	1.3	0.7	16	DEP L	
	17	1048	59.35	19	24.27	155	16.83	9.08	2.3	2.6	1.6	19	5	78	.13	1	0.9	0.6	16	INT L		
	17	1342	57.07	19	19.84	155	8.26	8.61	2.1	2.5	2.1	48	6	84	.10	5	0.4	0.4	47	SF4		
	17	1350	37.36	19	23.67	155	18.00	6.70	2.4		1.7	16	1	66	.13	2	0.6	1.1	16	INT L		
	17	1435	19.22	19	19.98	155	12.45	6.70	1.4	1.5	1.6	43	7	78	.15	5	0.4	0.6	36	SF2		
	17	1525	20.68	19	24.10	155	16.98	15.19	2.5	2.3	1.6	18	2	72	.15	1	1.1	2.0	16	DEP L		
	17	1640	14.33	19	17.12	155	13.00	8.08	2.1	1.9	1.9	38	5	171	.12	1	0.5	0.7	20	SF2		
	17	19	1	23.03	19	24.38	155	18.09	12.17	2.6	2.6	1.7	21	3	58	.14	2	0.9	0.8	1	INT L	
DEC	17	1950	50.27	19	30.75	156	29.83	2.82	1.5	1.9	13	2	302	.09	61	2.7	1.8	5	DIT			
	17	2142	55.08	19	25.12	155	18.10	6.75	2.1	2.1	1.3	10	0	144	.10	1	1.2	1.6	1	INT L		
	17	2347	1.60	19	23.82	155	15.80	0.36	2.2	2.5	1.6	11	3	133	.13	1	0.3	0.3	1	SEC L		
	18	217	12.19	19	21.35	155	1.17	7.12	2.9	2.9	3.1	51	7	172	.11	4	0.6	0.5	34	SF5		
JAN	18	257	56.47	19	18.65	155	16.04	8.60	1.4	1.2	1.3	27	4	118	.04	4	0.4	0.8	15	SF1		
	18	4	49.63	19	25.12	155	15.78	12.27	2.5	3.1	1.7	19	3	78	.15	2	0.6	0.9	1	INT L		
	18	457	34.17	19	24.98	155	20.07	4.11	2.1	2.3	1.6	12	2	110	.11	2	0.6	0.9	1	KAO L		
	18	647	43.75	18	55.99	155	13.40	39.79	2.8	3.0	2.0	42	3	245	.10	36	1.8	1.7	33	LOI		
FEB	18	9	2	28.86	19	23.38	155	27.49	10.67	1.6	1.6	1.4	28	2	60	.11	2	0.4	0.6	15	KAO	
	18	914	43.16	19	23.33	155	19.34	10.52	2.5	3.0	1.6	9	3	238	.15	5	2.2	1.1	1	KAO L		
	18	940	41.20	19	19.53	155	30.43	10.15	1.6	1.4	1.6	2	2	91	.11	7	0.5	1.0	8	KAO		
	18	12	5	54.79	19	23.64	155	18.60	12.10	2.1	2.1	1.3	14	3	122	.13	2	1.8	1.3	1	INT L	



# 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	LON W	DEPTH		AMP	DUR	CD	GAP			RMS	MIN	ERH	ERZ NO		
			HRMN	SEC			KM	MAG				NR	NS	DEG					SEC	DIS
1989	JUN	21	1039	54.43	19	25.48	155	17.16	8.30	2.2	2.5	1.5	23	9	95	.15	1	0.6	0.6 16 INT L	
		21	1224	15.86	19	24.40	155	16.32	12.69	2.1	1.8	1.5	19	6	86	.12	1	0.9	0.8 15 INT L	
		21	1350	0.63	19	23.52	155	17.53	10.66	2.1	1.9	1.4	21	8	51	.13	1	0.7	1.0 12 INT L	
		21	15	7	3.49	19	23.79	155	20.48	5.64	1.7	1.7	1.2	9	1	250	.04	6	3.5	3.7 1 KAO L
		21	1754	27.05	19	19.94	155	12.13	8.01	1.9	2.0	2.0	43	2	81	.12	5	0.4	0.6 29 SFC3	
		21	2135	35.51	19	24.89	155	15.22	9.37	2.2	2.2	1.5	20	5	129	.11	2	0.9	0.6 16 INT L	
		22	152	56.70	19	25.68	155	14.68	8.70	2.0	2.2	1.3	18	3	194	.10	2	1.0	0.7 16 INT L	
		22	345	42.37	20	5.71	155	25.40	0.30	3.0	3.1	3.0	58	5	220	.13	24	0.8	0.3 52 KEA F	
		22	537	37.21	19	25.66	155	17.66	10.07	1.9	1.7	1.2	19	5	84	.12	0	0.9	0.5 16 INT L	
		22	842	27.74	19	49.89	155	16.00	14.18	2.5	2.4	2.2	57	13	170	.11	10	0.4	0.3 45 KEA	
		22	1032	52.91	19	25.89	155	16.23	13.05	2.0	1.8	1.3	12	3	136	.11	2	1.9	0.9 1 DEP L	
		22	1058	38.43	19	26.74	155	29.64	9.72	1.6	1.3	1.3	28	3	44	.11	7	0.4	0.9 19 KAO L	
		22	1230	41.54	19	27.11	155	15.44	6.88	1.9	1.8	1.4	16	3	193	.17	2	1.1	0.9 1 INT L	
		22	1610	32.13	19	24.17	155	17.98	12.05	2.2	1.5	1.7	32	5	82	.12	2	1.0	1.4 2 INT L	
		22	1648	50.95	19	25.05	155	16.67	15.21	2.1	1.9	1.4	14	3	125	.16	1	1.9	1.2 1 DEP L	
		22	1939	35.29	19	23.17	155	20.10	12.73	2.2	2.3	1.5	12	3	154	.10	1	1.3	1.9 0 KAO L	
		22	21	9	24.81	19	22.05	155	2.37	6.12	1.7	1.6	1.7	36	3	132	.13	4	0.5	0.8 35 SFS
		22	2312	30.20	19	24.80	155	16.76	9.40	2.0	1.7	1.3	16	6	92	.12	0	0.8	0.8 10 INT L	
		22	2314	56.85	19	24.21	155	18.11	10.57	2.0	1.6	1.3	14	5	101	.12	2	1.1	1.0 11 INT L	
		23	148	42.30	19	24.90	155	18.22	7.75	2.4	3.2	1.8	18	5	93	.13	1	0.6	0.8 16 INT L	
		23	2	4	55.05	19	24.10	155	17.13	13.20	2.3	1.6	2.3	9	69	.14	1	1.2	0.6 14 DEP L	
		23	450	49.01	19	24.27	155	17.48	7.48	1.7	1.7	1.1	15	5	105	.22	1	1.5	0.9 9 INT L	
		23	6	7	23.59	19	24.61	155	15.85	7.51	2.1	2.0	1.5	15	3	88	.17	1	1.0	1.3 11 INT L
		23	752	49.87	19	24.12	155	16.72	1.26	1.7	2.0	1.5	8	0	120	.08	2	0.3	0.6 0 SEC L	
		23	1146	48.82	19	24.19	155	16.38	15.45	2.5	2.5	1.7	14	1	79	.10	1	1.2	1.7 0 DEP L	
		23	1323	23.48	19	21.36	155	4.82	7.86	2.4	2.8	2.6	47	5	88	.12	4	0.4	0.6 37 SFS	
		23	1628	42.57	19	22.05	155	16.89	5.54	2.2	2.5	1.5	20	9	114	.24	2	0.7	1.5 11 INT L	
		23	1646	49.67	19	25.22	155	15.79	8.87	1.8	1.6	1.2	17	2	129	.12	2	0.8	0.7 16 INT L	
		23	1941	1.58	19	25.33	155	15.96	11.46	2.1	2.4	1.5	16	2	128	.14	2	1.2	0.7 16 INT L	
		23	2117	59.61	19	25.10	155	16.46	2.73	1.3	2.0	1.3	16	0	105	.12	1	0.5	0.4 16 SNC L	
		23	2240	36.62	19	19.31	155	15.48	5.74	1.2	1.4	1.4	40	6	99	.13	4	0.3	0.6 35 SFI	
		24	042	8.44	19	50.12	156	19.25	69.68	2.4	1.5	2.0	2	3315	.22	53	4.2	2.6	22 HUA	
		24	043	22.18	19	44.25	155	14.99	7.01	1.7	1.2	1.1	3	171	.09	20	0.9	11.8 12 KEA *		
		24	052	23.33	19	22.95	155	18.92	9.91	2.2	2.0	1.4	18	4	114	.12	2	0.8	1.1 16 INT L	
		24	1	15.50	19	23.36	155	17.09	9.73	1.8	1.7	1.3	15	2	80	.09	0	0.8	0.8 16 INT L	
		24	258	2.30	19	12.01	155	28.27	6.23	2.6	1.6	1.6	36	5	97	.15	5	0.4	1.1 33 ISW	
		24	6	7	1.33	19	24.57	155	16.54	7.82	2.1	2.1	1.5	17	1	88	.13	1	0.7	1.2 16 INT L
		24	918	15.84	19	25.29	155	16.23	6.46	1.9	1.7	1.4	16	1	117	.12	2	0.7	1.1 16 INT L	
		24	12	9	48.94	19	25.83	155	50.58	13.31	1.9	1.5	2.5	5	120	.12	10	0.5	0.3 26 KON	
		24	1220	3.49	19	24.00	155	16.62	10.09	2.0	1.7	1.4	21	6	84	.14	0	0.9	0.6 16 INT L	
		24	13	4	22.66	19	26.00	155	15.08	5.67	1.7	2.0	1.2	17	3	191	.14	3	0.6	0.8 16 INT L
		24	1655	34.69	19	23.77	155	18.12	6.96	2.4	1.7	2.0	6	65	.17	2	0.7	0.9 16 INT L		
		24	1656	40.80	19	25.16	155	16.05	7.41	1.9	1.8	1.4	19	3	118	.15	2	0.8	0.6 16 INT L	
		24	17	3	7.81	19	19.16	154	59.14	37.21	2.2	2.1	2.0	56	7	209	.12	7	1.0	0.6 51 IER
		24	1926	2.56	19	25.08	155	16.06	8.72	1.8	1.7	1.2	16	2	115	.11	2	0.9	0.6 15 INT L	

## 1989 HVO EARTHQUAKE SUMMARY LIST

ORIGIN TIME						LAT N		LON W		DEPTH AMP DUR CD		GAP RMS MIN ERH ERZ NO									
YEAR	MON	DA	HHRM	SEC	DEG	MIN	DEG	MIN	RMS	AMP	DUR	CD	NS	DEG	SEC	DIS	KM	KM	FM	RMK	
1989	JUN	25	2	4	55.03	19	27.56	155	16.96	21.78	2.4	2.4	1.6	15	2	146	.08	4	1.0	1.5	0 DEP L
	25	238	31.36	19	24.63	155	15.84	6.53	1.8	1.8	1.3	15	0	93	.14	2	0.8	1.4	15 INT L		
	25	438	37.42	19	24.61	155	12.69	14.05	2.1	1.8	1.3	12	1	274	.09	3	1.7	1.2	2 DEP L		
	25	840	57.15	19	26.29	155	16.74	11.48	2.0	2.2	1.4	9	1	139	.06	2	1.8	1.7	3 INT L		
	25	938	1.21	19	25.75	155	15.29	5.60	2.2	2.7	1.4	6	0	260	.06	3	3.4	2.1	1 INT L		
	25	1147	39.84	19	23.34	155	17.81	10.65	1.9	2.0	1.3	9	2	93	.11	2	2.0	1.8	1 INT L		
	25	16	8	59.10	19	25.91	155	15.82	9.65	2.2	2.5	1.2	10	2	252	.10	3	1.4	2.6	1 SF2 L	
	25	17	0	49.19	49.79	155	44.24	21.95	2.5	2.5	2.2	33	3	213	.15	9	0.8	1.7	17 HUA		
	25	1727	3.91	19	21.69	155	5.01	9.27	6.2	6.2		53	0	81	.11	5	0.5	0.4	55 SF5		
	25	1732	8.48	19	22.41	154	59.24	7.27			3.7	34	1	179	.18	5	0.9	0.8	33 LER		
	25	1736	30.37	19	21.20	154	59.13	0.40			2.9	37	2	196	.15	7	0.8	0.6	37 SLE		
	25	1742	59.79	19	20.11	155	3.53	9.89			2.3	9	0	127	.03	1	1.8	3.1	8 SF5		
	25	1744	43.66	19	22.31	154	59.46	9.26			3.5	40	3	103	.12	5	0.8	0.6	26 LER		
	25	1748	27.77	19	20.95	155	3.96	5.83	1.7			13	1	107	.16	3	1.0	1.7	8 SF5		
	25	1749	12.05	19	21.68	154	59.75	2.66	2.1			12	1	194	.18	6	1.5	2.6	7 SLE		
	25	1750	6.15	19	21.63	155	14.56	13.03				9	0	143	.15	3	2.1	1.8	1 DEP		
	25	1751	26.04	19	20.61	155	3.58	9.16			2.1	10	1	145	.10	2	0.8	1.4	7 SF5		
	25	1752	24.69	19	25.49	155	2.17	0.89				12	2	161	.26	6	2.2	1.1	7 SME		
	25	1754	19.65	19	24.99	154	57.34	7.44	2.5			13	2	181	.14	2	2.1	1.5	10 LER		
	25	1756	4.07	19	20.01	154	57.64	9.36			4.0	53	6	204	.20	9	1.0	0.5	40 LER		
	25	1759	14.13	19	20.69	154	59.41	6.91			2.4	2.9	30	0	200	.12	6	0.7	0.8	16 LER	
	25	18	0	42.47	19	26.19	154	54.26	7.99	2.4		2.7	5	0	214	.06	3	2.0	1.9	3 LER	
	25	18	2	8.62	19	20.70	155	3.15	6.47	2.3		2.5	30	1	105	.11	2	0.5	0.8	18 SF5	
	25	18	6	46.06	19	22.79	154	59.24	7.17	1.2		20	1	183	.15	4	1.1	0.8	13 LER		
	25	18	7	23.77	19	20.87	154	59.64	3.46	2.3		2.2	21	0	196	.14	6	1.1	2.7	9 SLE	
	25	18	7	43.67	19	21.10	154	59.50			1.05	2.6	3.2	10	0	218	.14	18	3.5	16.5	2 SLE *
	25	18	9	16.53	19	24.80	154	59.09	7.04		2.0	2.1	21	1	147	.13	1	0.9	0.5	12 LER	
	25	1813	50.98	19	20.40	155	4.14	6.52	2.3	3.0	2.6	25	1	117	.12	2	0.5	0.8	12 SF5		
	25	1818	26.25	19	24.51	154	59.76	7.89	2.4	2.7	2.4	41	3	143	.14	2	0.5	0.4	22 LER		
	25	1826	37.61	19	20.76	154	58.92	6.83	2.2	2.2	1.9	12	1	211	.07	7	0.8	1.2	4 LER		
	25	1830	50.94	19	19.77	154	55.55	13.72	2.4	2.8	2.2	28	0	231	.07	11	1.3	0.5	14 LER		
	25	1835	50.23	19	20.25	155	0.13	8.44	2.2		2.0	13	1	214	.14	5	1.2	1.4	2 SF5		
25	1837	13.22	19	21.51	154	59.15	8.17	3.1	3.6	3.5	44	0	193	.12	7	0.8	0.5	37 LER			
	25	1840	35.22	19	24.54	154	53.56	13.50			14	0	222	.09	6	1.8	0.7	12 LER			
	25	1841	3.91	19	24.06	155	0.22	8.52	1.8		1.8	8	1	159	.05	3	0.9	1.1	7 SF5		
	25	1842	50.02	19	20.43	155	3.63	10.00	1.4		1.9	9	1	131	.10	2	1.0	1.3	6 SF5		
	25	1844	18.50	19	20.53	155	4.33	5.13	2.0		2.2	25	0	112	.10	3	0.6	1.2	16 SF5		
	25	1848	56.71	19	25.14	155	0.34	6.21	1.9	1.7	1.9	28	2	155	.10	3	0.8	1.0	10 SF5		
	25	1850	43.50	19	20.04	154	55.51	14.07	2.7		2.8	41	2	230	.09	11	1.1	0.3	24 LER		
	25	1852	10.60	19	20.15	154	58.76	9.81	3.3	4.0	3.0	56	8	205	.15	7	0.7	0.4	48 LER		
	25	1854	36.71	19	27.42	154	52.68	9.01	2.4		2.5	38	1	144	.14	3	1.0	0.4	42 LER		
25	1858	0.20	19	21.65	155	0.14	1.60	2.6	2.5		26	3	190	.17	6	0.8	1.4	18 SSF			
25	1859	16.41	19	20.05	155	4.31	6.06	1.2	1.6	1.8	35	3	136	.14	2	0.6	0.6	37 SF5			
25	1859	57.65	19	21.36	154	59.91	2.17	2.1	3.0		21	1	198	.12	6	0.8	1.0	21 SLE			
25	19	5	45.84	19	20.22	154	54.08	0.00	1.4	2.1	2.1	21	3	238	.24	12	2.0	0.7	7 SLE		

# 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME			LAT N	DEG MIN	LON W	DEPTH AMP		DUR	CD	NR	NS	DEG	RUS	MIN	ERH	ERZ	NO
			HRMN	SEC					KM	MAG										
1989	JUN	26	027	7.25	19	19.66	155	11.81	9.71	2.5	2.9	26	0	89	.09	6	0.5	0.7	29	SF3
		26	038	24.37	19	19.80	154	57.71	0.93	2.2	2.9	17	0	239	.10	9	1.4	1.0	16	S1E
		26	050	27.42	19	21.13	154	59.51	1.77	1.8	2.2	20	0	207	.12	6	1.2	2.1	17	S1E
		26	055	18.30	19	20.85	155	2.94	5.81	0.8	1.6	22	0	150	.15	2	0.7	1.0	20	SF5
	JUL	26	058	5.72	19	24.39	155	0.82	8.95	2.8	3.1	36	0	135	.10	4	0.6	0.4	32	SF5
		26	125	29.70	19	24.16	154	59.22	7.80	1.4	1.6	26	1	166	.15	2	0.7	0.9	21	LER
		26	128	10.24	19	20.61	154	53.75	0.97	2.0	1.5	20	1	240	.22	12	2.5	0.7	21	S1E
		26	135	51.82	19	21.97	154	55.35	6.97	2.7	3.1	27	0	219	.14	8	1.4	0.9	21	LER
	AUG	26	222	53.02	19	25.62	154	59.18	5.50	1.9	2.1	26	2	75	.13	1	0.6	1.0	24	LER
		26	241	26.63	19	21.06	154	52.04	12.76	2.0	1.7	20	0	248	.11	13	2.4	0.5	20	LER
		26	258	2.15	19	23.11	155	4.66	6.70	1.6	1.9	25	2	82	.16	3	0.5	0.9	22	SF5
		26	3	6.38	19	23.96	155	1.85	8.40	0.8	1.4	22	2	126	.15	4	0.9	0.6	16	SF5
	SEP	26	324	29.13	19	19.71	154	52.80	0.02	0.9	1.5	18	2	250	.14	14	1.8	0.7	17	S1E
		26	344	19.36	19	22.28	155	2.74	8.88	2.1	2.4	33	2	129	.09	4	0.5	0.4	27	SF5
		26	414	27.65	19	25.07	154	59.23	7.68	2.1	2.5	27	2	132	.14	1	0.6	0.7	23	LER
		26	432	32.85	19	21.11	154	57.28	5.31	2.8	3.3	26	0	214	.19	8	1.4	1.1	26	LER
	OCT	26	510	2.29	19	22.07	154	57.36	5.71	1.9	2.0	20	0	206	.25	6	2.0	2.3	22	LER
		26	534	58.64	19	21.68	154	59.67	1.37	2.5	3.1	26	1	194	.11	5	0.8	1.3	22	S1E
		26	6	42.76	19	21.38	155	0.65	1.53			18	0	189	.09	7	0.8	1.2	22	SF5
		26	6	4	20.89	19	19.54	155	0.91	0.00	2.6	16	2	230	.21	4	1.5	0.4	17	SF5
	NOV	26	621	37.57	19	21.62	155	0.02	0.84	2.1	3.0	19	2	192	.07	6	0.8	0.4	20	SF5
		26	627	37.65	19	23.19	154	56.30	6.93	2.5	2.9	25	0	205	.13	6	1.1	0.8	26	LER
		26	644	18.53	19	24.59	154	55.15	0.61	1.1	1.7	24	2	200	.16	5	0.5	0.4	19	S1E
		26	7	8	26.41	19	22.03	155	5.30	8.36	1.1	1.7	1.6	26	1	76	.10	5	0.5	0.6
DEC	26	710	40.92	19	17.65	155	12.73	9.83	2.9	3.2	30	35	3	148	.11	8	0.6	0.8	32	SF2
	26	714	35.53	19	21.70	155	1.26	3.56	1.2	1.3	9	1	188	.07	4	1.3	2.3	6	SF5	
	26	714	48.82	19	26.13	154	59.36	5.24	0.7	1.6	17	1	98	.17	2	0.8	1.5	12	LER	
	26	715	41.98	19	21.13	154	59.74	5.62	2.1	2.3	21	35	0	193	.12	6	0.8	1.4	19	LER
1990	26	725	41.17	19	21.56	155	0.57	0.06	1.8	1.7	16	0	178	.28	5	1.4	2.6	9	SF5	
	26	727	1.81	19	20.35	155	1.64	1.50	2.5	3.4	21	25	1	190	.07	2	0.6	0.3	15	SF5
	26	731	16.40	19	19.67	155	6.36	7.95	2.5	2.8	2.4	44	6	128	.09	5	0.5	0.6	36	SF4
	26	738	49.03	19	17.22	155	12.17	1.59	1.3	1.4	25	3	155	.09	2	0.5	0.5	16	SF5	
1991	26	756	41.73	19	20.48	155	6.22	8.29	1.2	1.4	32	3	108	.10	6	0.5	0.6	31	SF4	
	26	81	38.26	19	25.68	154	59.81	7.52	2.1	2.2	2.0	42	5	90	.10	2	0.3	0.5	17	LER
	26	817	2.25	19	21.00	155	3.41	0.03	1.8	1.8	18	1	108	.28	2	0.8	1.6	17	SF5	
	26	825	39.06	19	25.56	154	59.69	7.84	2.4	2.6	23	4	94	.09	2	0.4	0.9	17	LER	
1992	26	837	38.77	19	23.39	155	16.65	11.14	2.1	2.6	1.4	11	3	76	.03	0	1.6	2.3	2	INT L
	26	848	32.91	19	24.11	155	1.06	6.09	1.1	1.3	1.7	28	0	138	.13	5	0.6	1.5	20	SF5
	26	852	28.07	19	20.05	154	57.33	5.85	3.9	4.2	35	1	218	.11	10	1.0	0.7	32	LER	
	26	857	11.31	19	21.52	155	0.50	1.28	1.8	2.2	1.9	13	1	179	.10	5	0.7	1.6	11	SF5
1993	26	9	3	30.24	19	20.10	155	3.36	4.78	1.2	1.7	19	0	123	.14	1	0.8	1.3	18	SF5
	26	912	34.14	19	19.78	154	55.19	0.01	0.9	2.8	1.9	16	1	233	.19	12	2.0	1.2	5	S1E
	26	938	46.78	19	20.49	155	4.41	7.55	1.5	2.1	1.9	37	0	115	.08	3	0.4	0.8	18	SF5
	26	942	30.89	19	20.60	155	4.45	5.71	1.1	1.5	1.7	31	0	111	.12	3	0.5	1.1	16	SF5
1994	26	1020	19.54	19	28.70	154	53.66	1.45	2.3	2.7	1.8	33	0	106	.17	4	0.4	0.8	17	S1E

## 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	LON W	DEPTH AMP		DUR	CD	GAP				RMS	MIN	ERR	ERZ NO				
			HR	MM			KM	MAG			NR	NS	DEG	SEC					DIS	KM	FM	RMK
1989	JUN	25	1910	9.75	19	23.14	155	2.96	8.00	2.1	1.9	41	5	116	14	3	0.4	0.5	17	SF5		
		25	1915	35.67	19	20.99	155	4.94	6.65	2.1	2.3	1.9	35	2	105	12	4	0.5	0.7	23	SF5	
		25	1925	50.56	19	20.75	154	59.71	0.02	1.8	1.7	13	2	166	15	6	1.5	0.8	8	SLE	*	
		25	1926	44.73	19	24.81	154	59.11	8.17	2.2	2.3	30	2	160	16	1	0.7	0.7	23	LER		
		25	1936	59.77	19	19.61	155	7.10	7.79	2.1	2.4	2.2	42	4	115	10	4	0.4	0.7	27	SF4	
		25	1942	25.46	19	20.19	155	4.38	5.03	1.7	2.0	1.9	34	2	129	17	3	0.7	1.7	19	SF5	
		25	1944	30.65	19	21.70	154	59.80	0.29	3.4	4.0	39	1	185	13	6	0.5	0.6	18	SLE		
		25	1951	23.08	19	20.78	155	59.25	0.76	2.1	2.3	28	2	207	13	7	1.0	0.6	23	SLE		
		25	1957	4.92	19	24.67	154	59.92	6.91	1.8	1.4	29	4	144	19	2	0.9	0.5	18	LER		
		25	20	0	4.80	19	25.99	154	57.57	6.41	2.2	2.0	30	3	162	13	3	0.8	0.5	26	LER	
		25	20	1	19.91	19	21.23	154	56.18	0.06	1.4	1.5	16	0	220	12	8	1.2	4.1	14	SLE	*
		25	20	6	10.57	19	21.98	154	58.29	4.46	3.8	4.3	37	2	202	11	6	0.8	1.1	29	SLE	
		25	20	11	24.07	19	20.92	155	4.53	7.29	1.7	1.9	29	2	100	12	3	0.5	0.7	24	SF5	
		25	20	14	9.44	19	21.95	155	0.92	2.25	0.8	20	0	180	11	5	0.7	1.3	19	SSF		
		25	20	14	45.01	19	21.49	154	58.35	1.59	2.1	2.9	25	2	206	17	7	0.8	1.2	19	SLE	
		25	20	17	34.95	19	19.18	155	2.01	1.32	2.2	3.1	26	2	207	15	2	0.7	0.4	21	SSF	*
		25	20	19	50.73	19	20.49	154	58.02	0.01	2.5	2.9	32	4	216	18	9	1.2	0.3	28	SLE	
		25	20	27	30.91	19	23.19	155	4.47	5.58	1.6	17	0	86	15	7	0.7	2.6	12	SF5		
		25	20	30	45.78	19	19.76	154	57.99	3.85	1.4	2.4	23	3	238	13	9	0.8	2.3	20	SLE	
		25	20	33	13.14	19	19.23	155	6.12	7.90	2.2	33	1	146	11	5	0.6	0.5	33	SF4		
25	20	39	28.77	19	19.99	155	3.97	7.68	1.9	2.1	29	1	140	10	2	0.7	0.5	28	SF5			
25	20	46	45.82	19	20.36	154	59.84	5.23	1.3	1.4	27	1	207	13	5	0.8	1.1	25	LER			
25	20	58	35.16	19	24.00	155	16.03	10.12	2.1	2.4	11	2	112	10	2	1.0	1.0	6	INT L			
25	21	5	59.47	19	20.02	155	25.51	10.79	1.2	13	2	138	06	4	0.8	0.7	11	KAO				
25	21	15	16.20	19	22.73	154	54.96	13.68	1.9	1.5	15	0	218	08	9	1.5	0.6	17	LER			
25	21	19	9.85	19	21.74	155	0.94	2.23	1.8	2.0	27	2	177	13	5	0.7	0.9	25	SSF			
25	21	24	27.08	19	22.12	154	58.91	3.22	2.6	2.1	23	2	213	21	6	1.1	2.0	21	SLE			
25	21	40	0.24	19	25.20	154	58.21	8.80	2.2	2.1	31	5	167	14	1	0.6	0.5	26	LER			
25	21	47	16.21	19	20.40	155	3.33	5.88	1.7	1.9	30	2	93	14	1	0.6	0.9	25	SF5			
25	21	56	26.68	19	22.30	155	4.81	6.67	0.8	20	2	80	13	4	0.6	0.8	16	SF5				
25	22	4	42.96	19	24.27	155	0.44	5.14	0.8	21	2	147	14	3	0.8	1.1	14	SF5				
25	22	8	27.64	19	21.20	154	59.58	0.07	1.8	2.1	14	0	204	13	6	1.3	2.2	12	SLE			
25	22	13	56.12	19	21.15	155	2.52	7.09	1.1	1.7	20	0	146	10	2	0.7	0.9	17	SF5			
25	22	23	23.05	19	20.23	155	4.29	5.90	2.2	2.2	31	1	127	13	2	0.5	0.9	31	SF5			
25	22	24	58.04	19	22.08	155	5.31	6.28	1.4	1.7	28	1	74	13	5	0.5	1.1	23	SF4			
25	22	29	52.84	19	22.77	155	4.44	5.65	1.6	1.7	22	1	87	11	3	0.5	1.2	18	SF5			
25	22	49	5.82	19	20.33	154	55.26	4.28	1.4	10	0	233	10	11	2.0	14.3	13	SLE	*			
25	23	7	35.14	19	20.60	154	55.27	7.02	1.9	20	0	230	24	10	2.5	2.0	16	LER				
25	23	11	46.65	19	20.46	155	4.58	4.64	1.9	1.8	20	0	117	13	3	0.6	2.0	18	SSF			
25	23	19	29.78	19	20.51	154	57.13	5.79	3.0	3.4	23	0	217	14	9	1.5	1.2	26	LER			
25	23	35	47.40	19	22.92	155	4.76	8.62	3.0	3.4	35	0	82	10	3	0.4	0.4	34	SF5			
25	23	57	46.11	19	21.92	154	56.31	6.19	2.2	3.1	19	0	214	17	7	1.5	1.8	21	LER			
26	0	1	58.97	19	25.31	154	54.15	8.25	1.1	1.3	19	2	201	13	4	1.3	1.1	16	LER			
26	0	2	57.16	19	20.78	155	3.67	5.66	2.2	2.3	16	1	238	15	2	0.6	0.9	28	SF5			
26	0	14	54.19	21	50.15	154	53.75	8.00	1.3	36	0	930	13	11	1.8	2.0	16	LER				

YEAR	MON	DA	HRMN	SEC	ORIGIN TIME	LAT N	DEG MIN	DEG MIN	DEPTH	AMP	DUR	CD	MAG	MAG	NR	NS	RMS	MIN	ERH	ERZ	NO	KM	FM	RMK
1989	JUN	26	1022	28.45	19	21.07	154	58.06	0.52	2.2	2.9	2.0	25	1	210	.08	8	0.5	0.9	20	SLE			
									1.89	0.8	2.0	1.6	17	0	199	.08	3	0.9	0.5	7	SF5			
									7.40	1.2	1.4	35	6	166	.13	4	0.4	0.6	30	SF4				
									0.58	1.8	2.1	1.7	22	2	179	.13	5	0.6	0.5	25	SF5			
									2.19	2.0	1.2	1.6	21	2	236	.13	12	1.6	2.1	22	SLE			
26	1123	14.05	19	20.61	155	3.62	8.02	2.0	2.4	2.3	43	4	95	.13	2	0.5	0.4	43	SF5					
26	1238	58.54	19	22.13	154	56.78	0.00	1.1	1.6	28	2	202	.15	7	0.6	0.8	28	SLE	*					
26	1330	42.03	19	21.69	154	58.65	4.22	1.7	2.7	1.8	34	5	194	.19	6	0.8	3.6	29	SLE					
26	1346	42.55	19	20.59	155	4.65	5.93	1.3	1.6	22	0	112	.09	3	0.6	1.7	16	SF5						
26	14	6	40.29	19	21.24	154	58.21	0.97	3.0	3.7	3.2	45	6	202	.12	7	0.6	0.4	29	SLE				
26	1427	29.52	19	21.37	154	58.99	0.41	2.4	2.1	35	7	195	.18	7	0.7	0.5	28	SLE	F					
26	1428	26.58	19	21.34	154	58.77	1.47	2.7	3.5	2.5	28	4	197	.17	7	0.7	1.1	25	SLE					
26	1442	38.11	19	26.14	154	56.29	7.32	2.3	2.7	2.1	37	8	152	.10	3	0.4	0.6	31	IER					
26	15	6	22.57	19	15.94	155	30.14	8.74	1.3	1.3	21	3	83	.09	2	0.4	0.9	16	LSW					
26	1517	7.87	19	20.78	155	17.20	34.49	3.0	3.8		36	0	60	.10	1	0.7	1.3	27	DEW	F				
26	1548	31.97	19	23.55	155	17.76	12.35	2.2	2.5	1.4	15	3	88	.13	1	1.1	0.9	13	INT	L				
26	1747	39.53	19	24.73	154	58.72	6.56	1.3	1.4	1.7	30	1	171	.12	1	0.7	0.6	16	IER					
26	18	4	31.07	19	26.14	154	58.65	4.10	1.8	1.6	1.5	31	4	63	.09	1	0.4	0.5	22	SNC				
26	1822	53.10	19	21.43	154	58.64	6.69	2.1	3.1	1.8	13	0	201	.09	7	1.1	1.9	10	LER	L				
26	1834	26.92	19	25.11	155	15.91	8.25	2.4	3.1	1.4	12	2	178	.15	3	1.2	1.1	1	INT	L				
26	1934	55.38	19	23.16	155	16.13	0.06	1.4	1.6	1.2	11	2	125	.11	1	0.4	0.2	1	SEC	L				
26	1944	21.59	19	14.93	154	58.00	14.25	2.1	1.3	1.7	21	0	244	.06	13	1.8	0.6	17	DIS					
26	1945	11.58	19	22.35	154	59.64	7.80	1.8	2.2	2.0	34	0	194	.13	6	0.8	0.7	25	IER					
26	2014	59.82	19	22.06	154	58.36	4.15	1.8	2.2	1.5	13	1	188	.09	5	0.9	2.2	6	SLE					
26	2034	36.92	19	11.55	155	40.82	7.62	2.0	1.3	1.6	28	1	117	.24	9	1.0	2.0	2	LSW					
26	2246	39.74	19	20.30	155	4.20	7.19	2.0	2.1	2.0	47	5	123	.13	2	0.4	0.5	46	SF5					
26	2327	33.80	19	25.21	155	16.91	9.49	1.8	1.7	1.1	13	3	98	.06	1	1.2	0.8	11	INT	L				
26	2343	24.22	19	22.59	155	3.80	8.33	1.2	1.4	1.6	39	6	100	.13	3	0.5	0.3	34	SF5					
27	0	7	26.54	19	18.62	154	54.12	0.00	2.0	1.9	29	5	248	.31	14	2.9	0.9	27	SLE	*				
27	023	4.38	19	20.67	155	3.93	7.10	2.2	2.4	2.2	44	5	101	.12	2	0.5	0.6	41	SF5					
27	032	43.25	19	20.67	154	59.95	5.46	2.2	2.1	41	4	197	.18	5	0.8	1.0	39	IER						
27	033	33.62	19	21.50	155	0.16	1.20	2.6	3.1	2.5	40	4	185	.12	6	0.7	0.4	44	SF5					
27	145	41.17	19	21.04	154	59.67	8.40	2.2	2.3	2.4	41	0	194	.14	6	0.8	0.6	30	IER					
27	154	33.97	19	21.64	154	59.21	0.02	1.8	2.1	1.6	26	1	192	.28	7	1.1	1.5	13	SLE	*				
27	250	22.59	19	20.72	155	4.75	8.28	2.1	2.5	2.3	48	3	107	.11	4	0.4	0.5	31	SF5					
27	3	31.59	19	26.25	155	15.38	3.65	1.6	1.7	1.2	12	0	166	.16	3	0.8	1.0	1	SNC	L				
27	330	35.23	19	20.81	155	4.84	8.76	0.8	1.4	1.4	23	0	105	.07	4	0.5	1.1	13	SF5					
27	355	5.68	19	17.59	155	12.96	5.96	1.5	1.1	1.3	28	1	129	.09	1	0.4	0.9	13	SF2					
27	4	19.16	19	28.93	154	54.43	3.27	1.9	1.9	1.5	14	0	154	.11	3	0.7	0.8	8	SLE					
27	4	58.28	19	20.98	155	4.99	7.83	1.4	1.6	1.6	30	2	100	.11	4	0.5	0.8	15	SF5					
27	5	7	44.55	19	27.67	154	53.16	5.35	1.1	1.4	1.6	30	0	133	.11	3	0.6	1.1	14	IER				
27	724	17.36	19	23.57	155	15.28	7.63	2.6	1.8	7	0	156	.14	2	1.1	3.5	0	INT	L					
27	746	24.09	19	21.71	154	54.41	2.25	2.2	2.6	1.7	25	1	105	.25	3	0.7	1.1	10	SLE					
27	752	18.67	19	28.08	154	51.90	12.69	2.0	1.3	1.7	24	0	249	.11	12	1.9	0.6	7	IER					
27	752	59.96	19	22.81	155	4.33	8.70	1.7	1.9	1.7	24	1	89	.07	3	0.5	0.7	15	SF5					

YEAR	MON	DA	HRMN	SEC	ORIGIN TIME	LAT N	DEG MIN	DEG MIN	LON W	DEPTH	AMP	DUR	CD	MAG	MAG	NR	NS	RMS	MIN	ERH	ERZ	NO	KM	FM	RMK
1989	JUN	27	8	1	35.01	19	21.51	154	56.63	7.54	2.0	2.5	1.8	26	3	209	.17	8	1.0	0.8	23	IER			
										11.97	2.0	2.0	1.5	13	1	220	.10	3	1.5	0.9	1	INT	L		
										0.63	2.5	3.6	2.3	46	7	176	.13	3	0.7	0.3	43	SF5			
										0.00	1.4	2.1	1.7	18	4	213	.16	9	1.0	0.6	13	SLE	*		
										8.08	1.5	1.7	1.5	32	4	77	.11	3	0.4	0.8	28	SF3			
27	11	7	18.99	19	21.65	154	58.25	2.20	1.8	2.3	1.9	32	1	197	.15	7	0.9	2.1	32	SLE					
27	1133	31.37	19	20.90	154	56.93	0.04	2.0	1.7	1.9	1	221	.23	8	1.4	1.4	3	1.4	3	SLE	*				
27	1223	55.12	19	23.25	155	53.41	8.44	2.0	2.1	1.3	10	2	275	.08	11	2.2	4.1	1	1	KAO	L				
27	1243	3.30	19	22.30	154	53.69	8.99	1.3	1.6	20	0	226	.10	10	1.2	1.7	9	1.0	1	IER					
27	1338	23.90	19	20.67	155	1.73	1.70	2.4	3.1	2.2	32	0	181	.11	3	0.6	0.5	20	SF5						
27	1458	12.80	19	24.27	155	0.76	8.73	1.8	2.2	2.0	46	3	136	.12	4	0.5	0.4	25	SF5						
27	15	7	14.79	19	25.59	155	16.44	11.72	2.1	2.5	1.4	17	3	119	.07	2	1.4	0.6	1	INT	L				
27	1540	47.70	19	21.15	154	59.78	0.48	1.8	2.2	1.5	16	1	196	.09	6	0.8	0.9	5	SLE						
27	1545	36.44	19	21.06	155	6.42	8.07	2.1	2.4	2.0	40	2	93	.11	5	0.4	0.7	27	SF4						
27	16	9	39.07	19	25.73	155	15.76	6.44	1.7	2.2	1.3	12	0	146	.07	3	0.8	1.7	1	INT	L				
27	1616	5.49	19	19.97	155	7.57	9.30	0.9	1.4	1.8	10	0	98	.04	5	0.9	2.0	5	SF4	L					
27	17	3	26.06	19	27.19	155	14.20	9.53	1.9	2.3	1.3	17	3	216	.22	4	1.9	1.6	1	INT	L				
27	1741	41.20	19	20.74	155	6.01	8.05	0.8	1.4	1.4	16	0	103	.10	6	0.6	1.3	8	SF4						
27	1755	17.73	19	20.39	155	4.29	6.86	0.8	1.2	1.5	25	1	119	.10	3	0.5	1.1	17	SF5						
27	1919	11.51	19	21.35	154	57.12	3.23	1.9	2.2	1.9	42	2	207	.17	8	1.0	1.7	41	SLE						
27	2010	40.71	19	22.10	154	58.68	2.65	1.8	2.3	1.8	32	1	190	.19	6	1.0	1.5	32	SLE						
27	2028	16.84	19	14.62	154	59.41	12.83	1.9	1.7	1.6	31	0	240	.13	12	1.9	0.6	33	DIS						
27	2029	59.33	19	14.57	154	59.35	13.05	1.5	1.6	27	0	242	.11	12	2.0	0.6	27	DIS							
27	2044	23.06	19	13.04	154	58.37	13.79	2.4	2.7	2.5	45	0	238	.11	15	1.5	0.4	45	DIS						
27	21	1	47.21	19	16.29	155	0.91	14.32	1.5	1.5	28	0	229	.09	16	1.5	0.4	31	DEP						
27	2218	35.12	19	21.25	154	59.31	2.78	0.8	1.4	1.6	30	1	198	.15	7	0.7	1.8	8	SLE						
27	2221	0.24	19	21.36	154	59.19	0.88	1.3	1.8	1.7	27	2	194	.10	7	0.5	0.8	11	SLE						
27	23	6	36.24	19	25.91	155	15.47	10.61	2.1	2.8	1.4	13	2	176	.11	3	1.5	0.9	2	INT	L				
27	2317	15.37	19	27.10	155	15.98	21.21	1.6	1.7	1.2	10	1	191	.09	2	0.8	1.1	1	INT	L					
27	2341	13.77	19	22.07	154	57.61	2.14	2.4	2.9	2.2	36	0	199	.12	6	0.6	1.8	20	SLE						
28	133	44.15	19	22.41	155	15.56	4.48	1.8	2.2	1.2	9	2	241	.11	1	1.1	1.3	1	SEC	L					
28	229	8.26	19	20.72	155	4.61	7.87	1.4	1.7	1.6	34	0	107	.10	3	0.4	0.9	20	SF5						
28	347	43.43	19	21.80	155	6.27	8.91	0.8	1.2	1.5	29	4	93	.11	5	0.6	0.8	26	SF4						
28	350	56.24	19	25.89	155	15.68	11.01	1.9	1.9	1.3	15	7	159	.07	3	1.0	0.9	11	INT	L					
28	5	59.88	19	22.13	155	4.68	8.94	1.4	1.9	1.6	35	6	82	.11	4	0.4	0.5	29	SF5	L					
28	621	37.25	19	21.08	154	56.95	1.96	2.2	2.8	1.9	31	6	219	.19	8	0.7	1.1	25	SLE						
28	640	33.14	19	22.26	155	2.85	7.31	1.5	1.7	1.7	33	5	126	.11	4	0.4	0.7	27	SF5						
28	7	0	29.75	19	20.08	155	4.87	4.15	0.8	1.1	1.4	26	5	132	.13	3	0.5	1.5	21	SF5					
28	716	12.09	19	25.18	155	15.15	18.13	2.5	2.4	1.6	16	2	151	.14	2	2.0	0.9	15	DEP	L					
28	9	46.23	19	16.41	155	12.24	2.58	1.1	1.4	1.7	4	209	.07	2	0.8	0.4	13	SF5							
28	927	48.80	19	23.51	155	18.11	9.55	2.1	2.7	1.4	15	1	96	.13	2	0.8	1.2	15	INT	L					
28	941	9.47	19	17.68	155	13.58	4.99	1.5	1.3	1.3	21	4	103	.12	1	0.7	1.1	18	SSF						
28	942	28.40	19	21.72	154	56.22	0.00	1.9	2.2	1.7	16	1	215	.19	8	0.9	1.4	0	SLE						
28	1111	58.63	19	24.89	155	19.50	6.76	1.6	1.4	1.1	26	5	96	.09	2	0.4	0.8	16	KAO						
28	1138	29.73	19	19.30	155	11.81	7.42	1.5	1.2	1.2	20	2	97	.04	5	0.4	1.3	12	SF3						





## 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	LON W	DEPTH AMP		CD	GAP				RMS	MIN	ERR	ER2	NO																						
			HRMN	SEC			KM	MAG		DUR	NS	DEG	SEC						DIS	KM	RM	FTM	RMK																	
1989	JUL	10	237	20.52	19	19.45	155	6.86	6.25	1.6	1.7	1.6	30	2	124	.12	4	0.4	0.8	17	SF4																			
		10	3	42.69	19	24.45	155	15.64	9.15	2.4	3.0	1.6	22	4	78	.14	2	0.7	0.5	19	INT L																			
		10	343	33.32	19	24.87	155	17.30	11.32	2.6	3.0	1.5	18	3	111	.15	1	1.2	0.6	1	INT L																			
		10	638	26.03	19	22.22	155	2.70	6.81	1.2	1.6	28	0	131	.14	4	0.5	0.8	14	SF5																				
		10	810	29.87	19	27.23	155	10.46	19.94	2.3	2.8	1.3	10	2	318	.13	12	4.4	4.0	1	DEP L																			
		10	10	1	45.78	19	24.32	155	22.07	8.55	1.9	2.5	1.3	10	1	248	.08	7	1.8	2.3	2	KAO L																		
		10	1240	23.37	19	24.52	155	17.22	11.34	2.4	3.0	1.6	15	4	121	.14	1	1.4	0.7	2	INT L																			
		10	1244	42.15	19	23.22	155	19.24	8.50	2.2	2.6	1.6	11	3	111	.06	4	1.8	1.7	1	KAO L																			
		10	1624	7.75	19	25.27	155	17.32	11.12	2.2	2.5	1.6	21	5	88	.12	1	1.3	0.7	1	INT L																			
		10	1718	25.79	19	22.27	155	5.04	6.68	1.8	1.9	1.9	39	2	75	.11	4	0.3	0.7	22	SF5																			
19752	1.43	19	30.60	155	11.90	8.49	2.1	2.5	1.6	6	1	316	.09	14	3.2	3.3	1	GLN	L																					
																				10	1951	11.68	19	25.80	155	16.57	11.99	2.4	2.9	1.2	15	3	119	.13	2	1.2	0.7	2	INT L	
																				11	125	4.75	19	24.76	155	19.24	12.01	1.8	1.6	1.2	17	5	100	.11	1	1.1	0.8	12	INT L	
																				11	417	32.08	19	19.64	155	6.99	7.46	1.2	1.2	1.6	32	6	116	.11	5	0.5	0.8	26	SF4	
																				11	455	27.68	19	24.86	154	58.75	6.27	1.8	2.1	1.9	33	5	149	.13	1	0.5	0.8	28	LER	
																				11	5	7	56.28	19	24.64	155	15.63	10.58	2.1	2.4	1.6	16	2	105	.14	2	1.1	0.8	15	INT L
																				11	827	23.04	19	24.85	155	18.18	9.94	2.1	2.3	1.4	15	3	93	.17	1	1.0	1.0	12	INT L	
																				11	842	48.11	19	26.50	155	29.30	10.12	1.9	2.0	1.6	30	4	131	.7	0.4	0.7	27	KAO L		
																				11	1658	25.40	19	25.11	155	16.24	11.66	2.4	2.8	1.5	15	2	116	.11	1	0.7	0.9	1	INT L	
																				11	1742	46.50	19	23.57	155	18.88	12.87	2.5	2.6	1.6	15	2	65	.18	1	1.5	1.6	1	INT L	
1946	26.67	19	22.61	155	2.73	9.63	2.0	2.3	2.0	34	3	118	.10	4	0.4	0.5	0.5	22	SF5																					
																				11	2056	14.31	19	22.59	155	3.33	7.57	1.7	1.4	1.6	29	4	112	.15	4	0.5	0.7	11	SF5	
																				11	2146	4.27	19	22.10	155	6.17	6.21	1.9	1.5	1.7	39	6	75	.13	3	0.4	0.8	33	SF4	
																				11	2221	7.11	19	25.09	155	15.72	2.37	1.4	1.6	1.2	16	1	125	.08	2	0.3	0.3	15	SNC L	
																				11	2243	16.34	19	47.27	155	29.70	19.39	1.5	1.4	1.9	4	119	.13	4	0.9	0.8	15	KEA		
																				11	2312	41.67	19	30.53	155	15.98	24.59	2.1	1.6	1.7	56	14	101	.10	5	0.5	0.4	43	DEP	
																				12	058	42.41	19	15.93	155	33.27	8.73	1.8	1.4	1.5	24	4	96	.15	6	0.5	0.8	23	LSW	
																				12	210	24.70	19	25.04	155	15.86	10.40	2.4	2.9	1.8	15	1	118	.09	2	0.9	0.9	16	INT L	
																				12	343	44.76	19	25.20	155	15.76	5.70	1.5	1.5	1.1	18	3	129	.17	2	0.8	0.7	16	INT L	
																				12	548	7.69	19	24.41	155	16.81	9.51	1.9	2.0	1.2	19	4	81	.14	1	0.8	0.7	15	INT L	
12	8	48.15	19	24.47	155	0.32	7.72	2.1	2.5	2.0	41	7	143	.14	3	0.4	0.4	43	SF5																					
																				12	1122	54.62	19	16.13	155	29.29	9.94	1.7	1.2	1.3	18	6	59	.09	2	0.4	0.7	14	LSW	
																				12	1152	50.11	19	24.95	155	16.60	12.69	2.2	2.3	1.5	14	3	98	.15	1	1.4	1.3	12	INT L	
																				12	1559	18.39	19	25.50	154	59.03	7.14	1.8	1.6	1.7	21	1	73	.10	1	0.5	0.5	10	LER	
																				12	1841	29.66	19	19.93	155	9.69	7.62	1.8	1.5	1.8	36	2	84	.09	4	0.5	0.6	21	SF3	
																				12	2142	44.39	19	22.68	155	4.34	7.85	0.8	1.6	1.4	28	2	89	.16	3	0.6	0.6	28	SF5	
																				12	22	5	41.78	19	24.28	155	17.27	7.63	2.2	3.0	1.6	17	2	59	.15	1	0.8	0.9	16	INT L
																				12	2330	37.87	19	21.64	155	6.82	7.97	1.2	1.3	31	6	80	.13	3	0.4	0.5	25	SF4		
																				13	2	10.85	20	21.82	155	32.64	0.02	3.0	3.6	3.0	44	2	279	.15	36	1.5	0.6	52	KEA	
																				13	436	43.37	20	26.28	155	27.51	4.46	1.9	2.1	2.3	4	293	.12	48	0.6	0.8	20	DIS		
13	555	16.78	19	21.21	154	52.80	11.42	1.3	1.6	2.2	1	242	.14	12	2.3	0.9	23	LER																						
																			13	624	47.51	19	20.01	155	12.73	7.34	1.4	1.3	1.5	35	5	74	.13	5	0.4	0.6	31	SF2		
																			13	648	21.74	19	26.31	154	53.40	8.68	2.7	3.2	3.0	52	4	174	.11	4	0.7	0.3	48	LER		
																			13	732	28.62	19	24.88	155	17.65	11.05	2.4	3.1	1.4	20	4	171	.16	1	1.0	0.8	17	INT L		
																			13	15	3	14.84	19	25.55	155	20.15	0.89	2.0	2.9	1.4	9	0	148	.13	4	0.7	1.4	1	KAO L	
																			13	15	3	14.84	19	25.55	155	20.15	0.89	2.0	2.9	1.4	9	0	148	.13	4	0.7	1.4	1	KAO L	
																			13	15	3	14.84	19	25.55	155	20.15	0.89	2.0	2.9	1.4	9	0	148	.13	4	0.7	1.4	1	KAO L	
																			13	15	3	14.84	19	25.55	155	20.15	0.89	2.0	2.9	1.4	9	0	148	.13	4	0.7	1.4	1	KAO L	
																			13	15	3	14.84	19	25.55	155	20.15	0.89	2.0	2.9	1.4	9	0	148	.13	4	0.7	1.4	1	KAO L	
																			13	15	3	14.84	19	25.55	155	20.15	0.89	2.0	2.9	1.4	9	0	148	.13	4	0.7	1.4	1	KAO L	

## 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	LON W	DEPTH		AMP	DUR	CD	GAP			RMS	MIN	ERH	ERZ NO		
			HR	MM			KM	MAG				NR	NS	DEG					SEC	DIS
1989	JUL	7	1142	37.68	19 23.63	155 16.93	5.83	1.9	1.5	1.4	15	1	53	13	1	0.6	1.0	15	INT L	
		7	1759	22.04	19 20.42	155 6.47	8.95	2.1	2.0	2.3	53	7	107	13	6	0.4	0.4	46	SF4	
		7	1935	27.19	19 25.40	155 15.87	0.26	1.9	2.2	1.8	15	1	133	13	2	0.3	0.6	14	SNC L	
		7	1947	22.91	19 25.08	155 15.21	3.61	1.9	1.8	1.5	16	1	142	12	2	0.5	0.4	16	SNC L	
		7	2010	13.14	19 25.88	155 15.99	10.41	1.9	1.6	1.6	13	2	145	13	3	1.5	0.8	11	INT L	
		8	128	42.64	19 23.14	155 2.82	7.86	1.7	1.3	1.8	39	3	114	20	3	0.8	0.6	36	SF5	
		8	312	33.26	19 20.28	155 4.12	6.91	1.3	1.6	1.36	3	124	12	2	0.6	0.8	34	SF5		
		8	614	48.98	19 25.02	155 14.48	8.38	2.4	3.0	1.8	20	3	187	13	1	1.0	0.6	17	INT L	
		8	622	25.23	19 22.68	155 14.05	10.85	2.0	1.4	1.5	12	2	238	13	3	1.2	1.2	11	INT L	
		8	629	28.15	19 20.22	155 7.86	8.79	1.2	1.4	1.4	34	6	89	08	5	0.4	0.5	28	SF4 L	
8	8	8	8	3.16	19 18.59	155 18.06	32.91	2.4	2.7	2.8	57	7	112	12	2	0.6	0.6	50	DEP	
		8	911	9.71	19 24.67	155 17.64	11.08	2.1	1.9	1.5	17	3	54	10	1	0.9	0.7	16	INT L	
		8	1057	53.76	19 24.42	155 18.04	9.12	1.9	1.7	1.2	18	2	58	16	2	1.0	0.1	16	INT L	
		8	1154	51.69	19 24.63	155 17.23	9.26	1.8	1.8	1.2	17	2	51	13	1	1.0	0.9	15	INT L	
		8	1138	10.63	19 24.02	155 15.79	3.77	1.7	1.3	1.1	18	5	115	11	1	0.6	0.4	16	SEC L	
		8	12	5	9.48	19 25.94	155 15.31	10.38	1.9	1.4	1.3	19	3	178	12	3	1.1	0.6	16	INT L
		8	1216	35.41	19 25.71	155 15.87	9.02	2.0	2.2	1.5	19	3	145	12	2	1.0	0.6	16	INT L	
		8	1228	31.60	19 23.37	155 13.41	50.36	2.1	2.9	1.6	23	4	112	08	6	1.4	0.8	19	DEP L	
		8	13	1	14.51	19 27.98	154 53.08	7.33	1.1	1.5	1.7	31	3	122	13	3	0.7	0.6	29	LER
		8	1418	27.63	19 25.68	155 18.37	12.78	1.9	1.4	1.2	17	3	85	18	1	1.4	0.8	16	INT L	
8	8	8	1625	25.56	19 24.52	155 16.13	11.30	2.1	1.3	1.4	16	2	93	13	1	1.1	0.9	16	INT L	
		8	1932	8.84	19 24.91	155 16.99	8.10	2.4	2.1	1.8	19	2	90	11	0	0.6	0.6	17	INT L	
		8	1953	55.50	19 22.82	155 16.32	9.57	2.0	1.2	1.6	13	3	150	09	1	1.1	0.8	10	INT L	
		8	1958	5.26	19 24.32	155 15.49	11.1	1.5	1.1	1.3	18	4	89	11	2	0.2	0.4	15	SEC L	
		8	20	7	14.00	19 24.47	155 16.42	8.84	1.6	1.2	1.2	18	2	88	14	1	0.8	0.8	17	INT L
		9	153	43.51	19 20.99	155 15.21	30.79	2.7	2.5	2.6	59	9	70	12	3	0.6	0.4	51	DEP	
		9	2	8.25	19 26.23	155 15.22	0.01	1.9	1.8	1.1	14	2	191	12	3	0.3	0.7	13	SNC L	
		9	237	26.43	19 27.31	155 13.41	1.63	2.1	2.1	1.6	8	3	152	32	5	2.2	2.2	1	GLN L	
		9	420	2.69	19 25.89	155 16.26	2.11	2.1	2.1	1.2	10	2	134	10	2	0.3	0.6	2	SNC L	
		9	818	30.42	19 24.09	155 18.52	5.56	1.8	2.3	1.3	10	2	149	06	3	1.1	1.2	1	INT L	
9	9	9	1036	23.71	19 23.02	155 2.89	8.56	2.5	2.8	2.5	43	5	153	11	3	0.4	0.5	25	SF5	
		9	1053	20.52	19 21.91	155 30.36	10.09	2.7	2.9	2.6	49	10	32	13	5	0.3	0.5	32	KAO	
		9	1234	9.47	19 23.19	155 12.72	6.10	2.4	1.7	6	3	276	05	1	2.2	3.3	1	SF2 L		
		9	13	3	0.47	19 28.27	155 12.33	6.82	1.8	1.8	1.2	7	2	304	03	11	2.8	7.4	1	GLN L
		9	1358	35.13	19 26.74	155 19.22	9.73	2.4	2.6	1.7	12	2	124	07	3	1.7	0.5	1	KAO L	
		9	1642	51.55	19 30.62	155 15.74	10.02	2.1	2.2	2.0	53	12	82	14	6	0.3	0.6	21	GLN L	
		9	1657	37.95	19 24.99	155 17.93	10.19	2.0	2.3	1.3	13	3	78	22	1	1.7	0.8	10	INT L	
		9	19	0	32.97	19 23.70	155 0.64	8.90	1.8	2.1	1.9	45	8	143	12	4	0.4	0.4	35	SF5
		9	20	4	15.51	19 36.55	155 49.65	10.87	2.7	2.6	2.1	36	6	137	20	9	0.7	0.5	32	KON
		9	2029	56.43	19 24.36	155 16.72	2.67	2.0	2.7	1.5	11	2	81	09	1	0.4	0.5	15	SSC L	
9	9	9	2116	42.78	19 19.17	155 9.91	7.03	1.5	1.5	1.6	30	4	104	12	5	0.5	0.9	26	SF3	
		9	2128	11.53	19 19.78	155 7.10	8.14	2.5	3.0	2.8	53	7	111	12	5	0.3	0.4	47	SF4	
		9	2353	53.38	19 19.78	155 8.02	6.89	1.9	2.2	1.9	44	8	90	15	5	0.4	0.8	34	SF4	
		10	1	9	16.48	19 19.36	154 51.49	11.12	2.5	1.5	1.7	20	4	259	13	15	1.3	2.1	16	LER
		10	122	39.69	19 25.61	155 17.14	8.05	2.1	2.9	1.3	15	5	168	14	1	1.3	0.6	11	INT L	
		9	2116	42.78	19 19.17	155 9.91	7.03	1.5	1.5	1.6	30	4	104	12	5	0.5	0.9	26	SF3	
		9	2128	11.53	19 19.78	155 7.10	8.14	2.5	3.0	2.8	53	7	111	12	5	0.3	0.4	47	SF4	
		9	2353	53.38	19 19.78	155 8.02	6.89	1.9	2.2	1.9	44	8	90	15	5	0.4	0.8	34	SF4	
		10	1	9	16.48	19 19.36	154 51.49	11.12	2.5	1.5	1.7	20	4	259	13	15	1.3	2.1	16	LER
		10	122	39.69	19 25.61	155 17.14	8.05	2.1	2.9	1.3	15	5	168	14	1	1.3	0.6	11	INT L	



YEAR		MON		DA		HRMN		SEC		LAT N		LON W		DEPTH AMP		DUR		CD		GAP RMS		MIN		ERH		ERZ NO			
														KM		MAG		NR		NS		DEG		DIS		KM		RM FM RMK	
1989	JUL	20 1230	10.66	19	24.04	155	17.41	5.95	2.0	2.3	1.5	16	2	57	10	1	0.6	0.8	16	INT L									
		20 1252	40.23	19	14.66	155	26.97	12.40	1.7	1.7	1.8	45	4	94	12	5	0.3	0.5	41	LSW									
		20 1421	21.64	19	23.40	155	19.27	12.02	2.1	1.8	1.3	13	2	156	13	1	1.7	1.3	1	KAO L									
		20 1653	41.97	19	27.56	155	14.25	9.51	2.4	2.6	1.7	16	4	231	16	5	2.5	1.8	1	INT L									
		20 1658	38.54	19	24.97	155	16.72	9.34	1.8	1.3	1.2	18	4	149	13	1	1.1	0.5	1	INT L									
		20 1715	37.19	19	25.63	155	16.24	10.47	1.6	1.2	1.1	16	5	181	10	2	1.5	0.6	6	INT L									
		20 1725	53.42	19	28.48	155	16.33	7.93	1.5	1.3	1.2	12	3	271	13	6	1.4	1.1	1	GLN L									
		20 1758	51.41	19	25.08	155	15.99	10.48	1.7	1.4	1.1	12	1	164	10	2	1.4	0.7	4	INT L									
		20 20 5	48.83	19	23.23	155	13.39	10.11	2.5	2.6	1.6	7	0	262	06	3	3.3	4.2	0	SF2 L									
		20 2030	28.46	19	26.04	155	16.49	8.25	1.9	1.9	1.5	9	4	181	11	2	1.3	0.4	2	INT L									
		20 2112	53.27	19	25.37	155	16.92	9.85	1.8	1.2	1.4	15	4	100	15	1	1.2	0.8	13	INT L									
		20 22 6	52.90	19	22.98	155	16.99	11.01	2.2	2.2	1.5	20	6	68	18	1	0.9	0.6	15	INT L									
		20 2227	10.24	19	20.18	155	10.69	8.29	1.8	2.0	1.9	48	7	83	12	4	0.4	0.5	42	SF3 L									
		20 2239	30.43	19	22.18	155	16.83	11.32	2.2	2.1	1.4	15	4	105	13	2	1.5	0.7	12	INT L									
		20 2339	40.86	19	23.40	155	15.28	7.58	2.0	1.7	1.2	12	3	176	10	2	0.9	0.8	10	INT L									
		21 118	9.20	19	24.68	155	17.40	10.44	2.2	2.4	1.5	18	6	68	12	1	1.5	0.6	13	INT L									
		21 122	21.36	19	19.32	155	9.76	9.06	1.9	2.0	1.9	30	2	98	08	5	0.5	0.8	31	SF3									
		21 149	35.74	17	48.31	157	9.92	49.61	3.4	22	0	346	13206	16.4	2.5	23	DIST *												
		21 158	41.90	19	25.51	155	15.91	11.26	1.8	1.3	1.1	17	5	136	07	2	1.2	0.7	13	INT L									
		21 4	3	2.22	19	22.74	155	18.01	8.43	2.3	2.4	1.5	15	6	124	10	2	0.7	0.9	12	INT L								
21 5	1	55.09	19	25.27	155	17.79	11.28	2.0	2.4	1.4	15	5	136	12	0	1.7	0.6	11	INT L										
21 521	11.63	19	20.25	155	11.83	7.69	1.2	1.3	2.7	6	78	09	5	0.4	0.8	21	SF3												
21 6	14.00	19	25.60	155	17.28	12.77	1.9	1.4	1.2	16	4	94	12	1	1.5	0.7	13	INT L											
21 737	15.34	19	24.02	155	16.82	11.79	2.5	2.3	1.7	16	3	72	11	0	1.1	0.6	12	INT L											
21 846	8.26	19	27.59	155	13.51	2.14	2.3	1.5	1.7	14	5	261	09	6	1.2	0.9	2	GLN L											
21 1049	19.47	19	24.47	155	18.05	4.36	1.8	1.5	1.4	9	1	137	17	2	1.4	0.7	1	SSC L											
21 1453	47.55	19	17.67	155	13.27	4.47	2.2	1.7	1.6	8	0	266	16	9	7.1	17.9	2	SF2 L*											
21 2059	47.15	19	22.12	155	26.68	10.85	1.6	1.6	1.6	34	5	43	10	2	0.4	0.6	30	INT L											
21 2124	32.25	19	24.35	155	17.18	7.50	2.2	2.1	1.6	18	4	75	13	1	0.8	0.6	16	INT L											
21 2348	22.22	19	25.17	155	15.84	13.11	2.1	1.6	1.3	18	3	124	11	2	1.1	0.6	16	DEP L											
22 055	31.50	19	22.21	155	28.74	9.65	1.6	1.6	1.6	41	2	37	12	2	0.4	0.5	40	KAO											
22 3	22.03	19	18.64	155	13.76	7.59	1.4	1.2	1.5	39	6	67	12	3	0.4	0.6	34	SF2											
22 4	34.94	19	25.56	155	14.89	13.37	2.1	1.6	1.3	18	5	210	13	2	1.5	0.7	15	DEP L											
22 4	53.69	19	22.01	155	30.43	9.16	2.3	1.9	2.0	44	2	45	12	5	0.4	0.5	44	KAO											
22 13	7	41.73	19	21.75	155	12.66	3.82	2.4	2.3	1.8	32	8	56	11	2	0.4	0.4	25	SER										
22 1652	59.83	19	19.30	155	28.63	10.19	1.6			23	2	76	09	6	0.5	1.2	19	KAO											
22 1736	32.88	19	27.98	155	14.66	1.24	2.2	2.0	1.9	12	4	241	14	4	0.5	0.7	8	SNC L											
22 1821	11.62	19	20.64	155	13.09	7.65	2.4	1.9	2.5	49	9	62	16	4	0.4	0.4	41	SF2											
22 21	7.64	19	26.96	154	53.04	8.05	3.1	3.4	3.3	47	5	159	16	3	0.9	0.4	43	LSR F											
22 2119	6.62	19	22.78	155	2.90	8.85	2.0	1.8	2.1	31	4	122	16	4	0.6	0.4	28	SF5											
22 2227	20.85	19	25.46	155	20.38	7.80	2.9	3.2	5.0	6	56	13	3	0.3	0.5	44	KAO												
23 8	56.07	19	19.33	155	13.51	10.16				1.5	29	9	77	09	4	0.4	0.6	20	SF2										
23 918	25.55	19	25.29	155	16.12	13.45	2.1	1.5	1.4	18	5	121	12	2	1.2	0.6	4	DEP L											
23 15	34.58	19	25.46	155	25.75	6.82	2.4	2.4	1.1	5	1	326	11	14	3.2	14.9	1	KAO L*											
23 1635	28.19	19	27.10	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
23 1658	34.59	19	25.47	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
23 1658	34.59	19	25.47	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
23 1658	34.59	19	25.47	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
23 1658	34.59	19	25.47	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
23 1658	34.59	19	25.47	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
23 1658	34.59	19	25.47	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
23 1658	34.59	19	25.47	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
23 1658	34.59	19	25.47	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
23 1658	34.59	19	25.47	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
23 1658	34.59	19	25.47	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
23 1658	34.59	19	25.47	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
23 1658	34.59	19	25.47	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
23 1658	34.59	19	25.47	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
23 1658	34.59	19	25.47	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
23 1658	34.59	19	25.47	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
23 1658	34.59	19	25.47	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
23 1658	34.59	19	25.47	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
23 1658	34.59	19	25.47	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
23 1658	34.59	19	25.47	155	16.41	12.41	2.0	1.6	1.2	9	2	222	08	4	2.7	1.2	1	INT L											
2																													



YEAR	MON	DA	ORIGIN TIME		LAT N	ION W	DEPTH AMP		CD	GAP			RMS	MIN	ERH	ER2 NO
			HRMN	SEC			KM	MAG		MAG	NR	NS				
1989	JUL	26 1547	32.63	19 25.22	155 16.54	9.93	2.1	2.0	1.4	15	4	162	10	1	1.2	0.5 15 INT L
		26 1611	6.61	19 21.98	155 14.30	8.39	2.0	1.3	1.3	8	1	286	10	3	1.4	2.2 0 SF2 L
		26 173	53.76	19 24.81	155 18.30	10.47	2.2	2.1	1.6	11	1	105	12	2	1.4	2.5 0 INT L
		26 1840	0.32	19 44.23	155 55.69	35.84	2.4	2.2	1.8	22	4	275	12	31	1.4	1.1 16 HUA
		26 1855	10.88	19 24.94	155 15.36	5.77	1.9	1.7	1.3	17	2	128	14	2	0.7	0.7 16 INT L
		26 1931	32.80	19 56.36	155 31.47	12.65	1.7	1.7	1.7	17	1	228	08	17	1.5	0.6 14 KEA
		26 2032	7.88	19 24.36	155 17.11	8.38	2.3	2.5	1.6	18	2	72	15	1	0.9	0.8 17 INT L
		26 2034	29.75	19 24.61	155 17.01	10.54	1.9	1.4	1.2	12	4	105	20	2	2.5	0.7 2 INT L
		26 2211	15.84	19 24.58	155 16.22	4.15	1.5	1.8	1.2	17	2	93	22	1	0.8	0.6 16 SNC L
		26 2259	14.29	19 25.51	155 15.85	11.56	1.8	1.4	1.1	15	4	139	10	3	1.2	0.6 12 INT L
		26 23	7 20.04	19 24.54	155 18.15	7.23	2.1	2.2	1.5	17	3	94	12	2	0.6	0.7 16 INT L
		26 2349	37.19	19 25.49	155 15.12	11.03	2.1	2.1	1.5	19	4	169	12	2	1.2	0.7 15 INT L
		27 049	2.59	19 25.19	155 15.99	11.36	2.1	2.1	1.5	19	4	122	07	2	1.0	0.5 15 INT L
		27 111	30.85	19 24.96	155 16.04	11.34	1.9	1.2	1.3	18	4	111	09	2	1.0	0.5 14 INT L
		27 142	42.19	19 24.94	155 16.64	10.62	2.3	2.4	1.6	18	4	96	05	1	0.8	0.4 15 INT L
		27 211	18.86	19 24.38	155 16.10	9.45	2.1	2.0	1.5	20	4	88	13	1	0.9	0.6 16 INT L
		27 241	57.77	19 24.19	155 16.78	11.93	2.1	1.8	1.4	16	1	76	09	1	0.9	1.7 16 INT L
		27 3	0 39.25	19 25.32	155 16.00	9.50	2.7	1.2	1.2	19	3	126	09	2	0.9	0.4 16 INT L
		27 333	22.61	19 24.83	155 17.53	9.72	2.4	2.5	1.3	19	5	66	16	1	1.1	0.7 16 INT L
		27 343	4.61	19 25.67	155 16.06	7.84	1.9	1.8	1.3	18	2	136	13	2	0.9	0.6 16 INT L
27 4	0 22.86	19 25.31	155 16.09	10.98	2.1	1.9	1.3	20	4	122	10	2	1.0	0.6 16 INT L		
27 436	22.35	19 23.85	155 18.43	11.65	2.2	2.4	1.5	17	4	67	11	3	0.9	0.7 15 INT L		
27 539	16.64	19 24.77	155 16.23	8.31	1.9	1.9	1.3	19	4	99	15	1	0.9	0.5 16 INT L		
27 6	1 57.34	19 24.98	155 15.15	12.18	2.1	2.3	1.6	18	3	138	15	2	1.3	0.7 16 INT L		
27 616	55.97	19 25.16	155 15.57	10.73	2.2	1.9	1.5	18	4	133	09	2	0.8	0.6 16 INT L		
27 639	32.45	19 24.38	155 16.87	8.74	2.0	2.0	1.5	16	1	79	13	1	0.7	1.0 16 INT L		
27 717	23.03	19 23.08	155 15.88	9.47	2.5	3.0	1.7	14	2	140	13	1	1.0	0.9 16 INT L		
27 741	50.90	19 25.12	155 16.05	5.50	0.8	2.3	1.4	13	0	117	10	2	0.6	1.2 13 INT L		
27 811	1.81	19 25.76	155 15.86	7.95	2.1	2.6	1.6	18	4	146	10	3	0.9	0.5 15 INT L		
27 853	37.95	19 24.27	155 17.12	13.38	2.4	2.6	1.6	19	8	79	12	1	1.3	0.6 12 DEP L		
27 938	54.19	19 25.24	155 16.83	12.62	2.4	3.1	1.8	18	5	100	07	1	1.2	0.6 14 INT L		
27 10	0 30.44	19 23.33	155 16.90	7.41	1.6	1.7	1.2	17	2	55	14	0	0.7	0.9 16 INT L		
27 1024	27.13	19 24.97	155 16.25	9.08	2.1	2.6	1.5	17	2	106	13	1	0.9	0.6 16 INT L		
27 1052	0.64	19 29.20	155 24.38	4.08	1.4	1.2	1.0	15	0	91	12	2	0.6	1.2 8 KAO		
27 11	0 55.03	19 18.45	155 13.12	5.14	1.1	1.3	1.2	2	92	05	3	0.4	1.5	9 SF2		
27 1126	59.82	19 23.33	155 2.40	6.71	1.2	1.6	2.2	2	127	10	3	0.5	0.8	8 SF5		
27 1140	22.38	19 22.98	155 2.46	7.37	1.7	1.6	1.6	23	2	131	11	4	0.5	0.8 7 SF5		
27 1150	16.58	19 24.48	155 17.51	6.84	2.0	2.3	1.5	17	3	66	11	1	0.7	0.7 15 INT L		
27 1254	39.18	19 24.65	155 16.76	7.04	1.9	2.0	1.4	15	1	88	12	1	0.6	0.8 16 INT L		
27 1417	42.30	19 23.30	155 19.64	4.68	2.0	2.5	1.5	15	2	118	14	5	0.6	2.5 16 KAO L		
27 1420	4.90	19 19.57	155 8.50	6.69	1.6	1.7	1.7	31	2	80	08	4	0.4	0.9 17 SF4		
27 1448	7.74	19 24.74	155 17.32	5.50	1.6	2.1	1.3	12	0	80	15	2	0.7	1.6 13 INT L		
27 16	0 50.21	19 24.74	155 16.82	7.39	2.1	2.7	1.6	18	4	89	13	0	0.8	0.4 16 INT L		
27 1714	23.93	19 24.88	155 18.30	7.20	1.7	1.7	1.1	12	2	132	08	3	0.8	1.0 11 INT L		
27 1730	55.77	19 24.45	155 19.04	6.76	1.7	2.1	1.2	12	2	129	12	2	0.9	1.3 12 KAO L		

YEAR	MON	DA	ORIGIN TIME		LAT N	DEG MIN	ION W	DEPTH		AMP	DUR	CD	GAP			RMS	MIN	ERR	ERZ NO			
			HR	MM				KM	MAG				MAG	NR	NS					DEG	SEC	DIS
1989	JUL	27	1739	8.26	19	11.96	155	28.08	5.59	1.6	1.5	18	0	115	.18	5	0.8	2.7	9	LSW		
		27	19	2	53.71	19	24.78	155	16.85	6.74	1.8	1.8	0.9	17	4	147	.12	2	1.0	0.5	12	INT L
		27	1930	36.32	19	24.68	155	15.90	8.47	2.1	2.7	1.5	20	5	87	.14	0	0.9	0.5	16	INT L	
		27	1959	58.76	19	23.92	155	18.98	5.78	1.8	2.0	1.2	15	2	70	.14	4	0.6	1.5	16	INT L	
		27	2048	6.01	19	23.83	155	19.28	5.80	2.3	2.9	1.6	17	4	107	.13	4	0.7	1.4	16	KAO L	
		27	2057	26.24	19	24.21	155	16.70	6.91	2.0	2.3	1.4	16	4	100	.11	1	0.9	0.6	14	INT L	
		27	2116	55.54	19	24.41	155	16.94	9.96	1.7	1.9	1.1	20	6	79	.15	1	0.9	0.5	15	INT L	
		27	2129	21.39	19	24.92	155	18.71	9.88	2.2	2.6	1.4	17	4	99	.12	2	0.9	0.8	16	INT L	
		27	22	7	35.56	19	24.27	155	18.08	7.53	2.0	2.3	1.4	20	4	60	.22	2	0.9	1.0	16	INT L
		27	2257	15.84	19	25.19	155	15.03	8.77	2.5	2.6	1.6	19	3	157	.13	2	1.0	0.7	16	INT L	
		27	23	7	16.29	19	24.95	155	16.57	8.92	1.8	1.6	1.3	17	3	99	.14	1	0.9	0.6	15	INT L
		27	2336	32.32	19	23.38	155	17.46	9.65	2.1	2.1	1.4	18	4	87	.11	1	0.8	0.8	15	INT L	
		27	2357	29.03	19	25.01	155	18.02	10.98	1.8	1.9	1.2	19	4	79	.11	1	0.9	0.5	16	INT L	
		28	024	37.99	19	25.01	155	17.49	8.18	2.0	2.4	1.4	17	3	81	.11	1	0.7	0.5	16	INT L	
		28	118	51.32	19	24.39	155	18.79	9.83	2.5	2.9	1.7	15	2	77	.10	3	0.7	0.9	16	INT L	
		28	131	43.71	19	25.22	155	15.76	9.04	1.9	1.6	1.2	20	4	130	.12	2	1.0	0.6	16	INT L	
		28	226	54.50	19	25.21	155	17.11	8.11	2.1	2.4	1.4	17	4	152	.16	1	1.1	0.4	16	INT L	
		28	312	51.43	19	24.23	155	16.73	8.04	1.8	2.4	1.1	20	4	78	.18	1	0.9	0.7	16	INT L	
		28	4	58.62	19	26.30	155	14.82	3.18	1.9	2.4	1.5	18	3	205	.13	3	0.5	0.8	16	SNC L	
		28	536	26.93	19	23.93	155	15.17	11.20	2.2	2.4	1.4	19	4	159	.21	2	1.5	0.8	16	INT L	
28	654	3.62	19	19.72	155	10.19	6.41	1.3	24	2	91	.12	4	0.6	0.8	25	SF3					
28	755	53.40	19	24.53	155	18.12	5.46	2.0	2.2	1.4	17	3	60	.11	2	0.5	0.6	16	INT L			
28	1118	46.70	19	18.51	155	31.03	10.45	1.5	1.3	30	4	84	.10	7	0.3	0.29	LSW					
28	1119	55.10	19	24.18	155	16.61	8.12	2.4	2.3	1.7	16	2	77	.15	1	0.8	0.8	15	INT L			
28	1228	49.90	19	25.03	155	16.48	7.01	1.9	1.8	1.4	17	4	102	.13	1	0.8	0.4	16	INT L			
28	1325	9.04	19	23.71	155	18.19	5.74	2.0	2.0	1.1	14	15	2	66	.16	2	0.6	1.1	16	INT L		
28	1441	55.87	19	25.38	155	15.93	6.65	1.7	1.3	1.3	14	1	171	.13	2	1.1	0.9	15	INT L			
28	1517	44.34	19	23.75	155	17.51	7.40	1.9	1.9	1.4	16	2	59	.14	1	0.6	0.9	15	INT L			
28	1656	5.54	19	24.84	155	16.50	7.27	2.3	2.7	1.7	18	4	123	.11	1	0.8	0.4	16	INT L			
28	1658	46.93	19	24.83	155	17.07	4.98	1.7	1.3	1.2	12	1	86	.21	2	1.0	1.3	11	SNC L			
28	1717	58.15	19	24.60	155	16.25	6.13	1.7	1.4	1.3	17	2	94	.23	1	0.9	0.8	15	INT L			
28	1741	53.88	19	23.88	155	17.03	9.18	2.3	2.4	1.6	16	2	68	.11	1	0.8	0.9	15	INT L			
28	1951	29.80	19	21.04	155	23.80	9.63	1.2	1.1	1.9	5	111	.07	2	0.4	0.7	15	SWR				
28	20	3	18.63	19	22.53	155	18.50	6.58	2.3	5.2	1.6	12	4	182	.10	3	1.3	1.1	11	INT L		
28	2222	8.70	19	24.37	155	17.04	11.56	2.1	2.3	1.5	14	3	79	.10	1	1.3	1.1	10	INT L			
28	2229	20.13	19	22.82	155	26.74	10.51	2.1	2.4	2.0	41	6	35	.11	2	0.4	0.5	36	KAO			
28	2311	50.21	19	24.15	155	17.24	10.31	2.1	2.1	1.4	19	7	62	.11	1	1.3	0.6	12	INT L			
28	2345	43.89	19	24.76	155	17.47	7.79	2.1	2.2	1.5	13	4	83	.13	1	1.0	0.5	11	INT L			
28	2355	49.99	19	25.07	155	17.51	11.48	2.1	1.8	1.3	13	7	111	.14	1	1.2	0.7	12	INT L			
29	011	45.43	19	26.72	155	16.13	7.28	1.6	1.5	1.2	13	4	218	.18	4	1.7	1.4	10	INT L			
29	027	56.31	19	23.47	155	16.38	7.78	2.2	2.2	1.5	18	6	61	.11	1	0.8	0.9	11	INT L			
29	042	44.85	19	24.93	155	17.63	7.90	2.3	2.4	1.6	17	3	89	.11	1	0.9	0.6	15	INT L			
29	110	41.89	19	23.20	155	17.09	11.37	2.2	2.2	1.0	15	4	80	.11	0	1.3	0.8	9	INT L			
29	138	29.05	19	23.40	155	16.92	8.46	1.9	1.9	1.5	14	4	100	.09	0	1.1	0.7	9	INT L			
29	238	59.07	19	23.89	155	16.09	13.65	2.6	2.5	1.8	15	6	72	.10	1	1.3	0.7	11	DEP L			

## 1989 HVO EARTHQUAKE SUMMARY LIST

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ORIGIN TIME		LAT N		LON W		DEPTH AMP DUR		CD		GAP RMS MIN ERH		ERZ NO								
YEAR	MON DA HRMN SEC	DEG MIN	DEG MIN	DEG MIN	RM	MAG	MAG	MAG	NR	NS	DEG	SEC	DIS	RM	RM	FM	RMK			
1989	JUL 29	250	32.63	19 25.25	155	17.64	10.93	1.9	1.5	1.2	16	5	83	16	0	1.7	0.9	11	INT L	
	29	322	31.05	19 24.86	155	17.08	11.18	2.0	1.6	1.3	18	7	77	11	0	1.6	0.7	10	INT L	
	29	322	39.82	19 25.01	155	16.81	12.17	2.5	2.5	1.7	17	5	95	10	0	1.3	0.7	13	INT L	
	29	338	43.71	19 25.05	155	17.79	4.76	1.5	1.2	1.1	10	3	86	19	1	1.3	0.9	7	SNC L	
	29	4	48.70	19 25.75	155	15.39	12.39	1.9	1.2	1.2	15	6	168	10	3	1.3	0.8	11	INT L	
	29	433	22.38	19 25.63	155	16.93	12.25	1.9	1.5	1.2	15	6	105	14	1	1.7	0.9	7	INT L	
	29	451	15.30	19 25.33	155	16.72	8.03	2.4	2.5	1.7	20	5	106	19	1	1.0	0.6	16	INT L	
	29	528	28.67	19 24.99	155	16.55	8.76	2.1	2.0	1.4	20	4	100	10	1	0.7	0.4	16	INT L	
	29	553	16.76	19 24.55	155	15.96	9.55	2.1	1.5	1.3	16	4	96	10	2	1.2	0.7	16	INT L	
	29	6	3.72	19 24.94	155	15.85	8.13	2.1	1.8	1.3	21	6	155	14	2	1.1	0.6	16	INT L	
	29	627	24.59	19 24.17	155	17.21	10.26	2.1	1.9	1.3	18	3	65	13	1	0.8	0.7	16	INT L	
	29	640	16.31	19 26.60	155	14.94	10.13	1.9	1.3	1.3	19	5	187	10	4	0.9	0.6	3	INT L	
	29	7	3	0.10	19 25.84	155	16.05	10.13	2.5	2.5	1.6	15	4	142	11	2	0.9	0.5	1	INT L
	29	719	9.24	19 21.66	155	16.51	8.35	1.7	1.2	1.1	12	3	172	09	2	1.2	1.8	1	SF1 L	
	29	738	24.11	19 23.65	155	14.98	8.57	2.5	2.2	1.8	11	3	95	10	2	3.4	1.7	1	INT L	
	29	8	0	59.56	19 24.03	155	18.77	7.86	2.0	1.4	1.4	11	1	156	18	3	1.0	3.2	1	INT L
	29	820	39.95	19 18.56	155	24.14	9.38	2.3	1.9	1.3	8	1	334	18	15	5.0	10.1	0	SWR L	
	29	837	41.02	19 25.61	155	16.71	11.80	2.0	2.0	1.3	13	4	112	12	1	2.5	0.7	1	INT L	
	29	846	12.15	19 25.27	155	15.95	14.49	2.6	2.4	1.6	14	3	126	07	2	1.6	0.6	2	DEP L	
	29	9	5	31.46	19 22.60	155	14.20	3.53	2.0	1.3	1.5	19	4	91	08	2	0.4	0.3	10	SEC L
	29	921	29.74	19 24.05	155	15.37	12.98	2.1	1.9	1.4	15	3	75	21	2	2.1	1.1	1	INT L	
	29	936	56.49	19 24.20	155	16.52	9.84	2.0	1.9	1.6	11	4	148	07	1	3.3	1.1	1	INT L	
	29	946	49.33	19 25.58	155	15.70	11.23	2.0	1.9	1.3	13	3	146	06	3	1.4	0.6	2	INT L	
	29	1013	50.04	19 23.79	155	15.45	8.52	2.4	2.4	1.7	16	5	100	13	2	1.2	1.0	1	INT L	
	29	1041	3.99	19 24.70	155	16.48	9.03	2.0	2.0	1.4	20	4	93	09	1	0.8	0.5	16	INT L	
	29	1113	33.43	19 25.20	155	15.53	9.05	2.3	2.4	1.6	20	4	136	15	2	1.0	0.5	16	INT L	
	29	1135	28.57	19 24.04	155	18.50	10.64	2.1	2.0	1.4	20	4	65	14	2	0.9	0.9	16	INT L	
	29	1146	31.09	19 25.21	155	15.63	7.41	2.1	2.2	1.4	18	4	134	10	2	0.9	0.6	16	INT L	
	29	12	2	34.08	19 25.77	155	15.62	8.17	2.1	2.2	1.4	21	5	157	13	3	1.0	0.5	16	INT L
	29	1219	11.49	19 24.79	155	16.51	6.77	1.8	1.7	1.3	17	2	96	10	1	0.7	0.5	16	INT L	
	29	1220	39.86	19 25.23	155	16.35	8.28	1.9	1.2	1.2	18	3	112	11	1	0.8	0.4	16	INT L	
	29	1234	40.55	19 24.86	155	15.78	7.73	2.3	2.4	1.7	18	4	113	13	2	0.8	0.5	15	INT L	
	29	13	0	34.48	19 24.44	155	17.65	6.32	2.2	2.2	1.5	15	1	70	16	2	0.8	1.1	14	INT L
	29	1327	1.73	19 24.67	155	16.39	7.29	2.0	1.8	1.4	19	4	94	11	1	0.7	0.4	16	INT L	
	29	1342	16.10	19 25.44	155	17.26	5.95	2.1	2.2	1.6	16	3	92	17	1	0.8	0.5	15	INT L	
	29	1413	22.06	19 24.53	155	16.68	9.19	2.1	1.9	1.5	18	2	86	14	1	0.8	0.7	16	INT L	
	29	1451	57.75	19 24.70	155	15.53	8.57	1.9	1.3	1.2	16	4	109	12	2	1.0	0.6	14	INT L	
	29	1459	40.20	19 24.44	155	16.15	4.54	1.9	1.7	1.3	17	2	90	17	1	0.7	0.6	16	SEC L	
	29	1515	6.64	19 19.53	155	8.53	9.06	3.2	3.3	3.7	49	6	79	11	4	0.4	0.4	50	SF4 F	
	29	1525	17.60	19 19.35	155	8.36	6.61	1.6	1.2	1.6	31	5	86	12	4	0.4	0.7	28	SF4	
	29	1535	55.94	19 24.76	155	16.24	9.50	2.2	2.0	1.5	20	4	99	14	1	1.0	0.6	16	INT L	
	29	16	3	43.88	19 24.80	155	15.82	7.83	2.1	2.1	1.5	20	6	109	16	2	0.9	0.6	15	INT L
	29	1642	47.69	19 23.72	155	17.35	7.21	2.1	2.0	1.4	18	4	57	12	1	0.6	0.6	16	INT L	
	29	1710	57.67	19 24.15	155	17.66	6.21	1.5	1.1	1.1	16	4	123	10	2	0.7	0.6	14	INT L	
	29	1724	19.04	19 25.03	155	15.90	6.68	2.1	1.7	1.4	19	5	117	12	2	0.7	0.5	16	INT L	

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## 1989 HVO EARTHQUAKE SUMMARY LIST

ORIGIN TIME				LAT N		LON W		DEPTH AMP DUR				CD				GAP RMS MIN ERH				ERZ NO		
YEAR	MON	DA	HRMN	SEC	DEG	MIN	DEG	MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	RM	FM	RMK		
1989	JUL	29	1738	6.74	19	48.01	155	24.23	26.62	1.6	1.3	26	6	129	12	6	0.7	0.6	20	KEA		
		29	1742	30.96	19	25.79	155	16.09	7.27	2.1	2.0	1.4	18	4	182	11	2	0.9	0.6	16	INT L	
		29	1821	23.53	19	26.65	155	16.08	5.40	2.2	2.5	1.7	15	4	205	13	4	0.9	1.0	14	INT L	
		29	1839	9.52	19	24.44	155	15.55	6.82	1.7	1.3	1.2	20	5	95	21	2	1.1	0.8	15	INT L	
		29	1858	4.65	19	23.56	155	18.57	8.82	1.9	1.6	1.2	15	3	72	16	2	0.8	1.1	13	INT L	
		29	1920	54.51	19	25.19	155	16.94	10.71	2.5	2.5	1.7	16	3	153	11	1	1.0	0.6	15	INT L	
		29	2019	34.56	19	24.52	155	16.98	7.51	2.0	1.5	1.4	13	4	119	11	1	1.0	0.6	12	INT L	
		29	2058	52.56	19	25.44	155	18.43	6.43	1.8	1.4	1.4	17	4	79	24	1	1.1	0.9	14	INT L	
		29	2129	9.32	19	25.63	155	16.30	8.25	1.8	1.2	1.2	19	4	125	13	2	0.8	0.6	16	INT L	
		29	2144	13.97	19	25.23	155	16.28	9.52	1.8	1.3	1.2	17	3	114	12	1	0.8	0.5	15	INT L	
		29	22	7	55.87	19	24.94	155	17.01	8.03	2.2	2.0	1.5	16	3	89	13	1	0.7	0.6	14	INT L
		29	2259	26.24	19	24.24	155	17.09	10.74	2.1	1.3	1.2	17	3	73	12	1	0.9	0.8	16	INT L	
		29	2323	59.57	19	24.83	155	16.48	7.53	1.9	1.7	1.2	19	4	97	15	1	0.7	0.4	16	INT L	
		29	2353	16.93	19	24.30	155	18.06	13.22	2.2	1.8	1.5	16	2	98	08	2	0.9	0.9	16	DEP L	
		30	027	13.60	19	24.92	155	17.04	12.95	2.1	1.5	1.2	17	3	89	15	0	1.2	0.7	15	INT L	
		30	1	0	17.30	19	25.41	155	15.98	5.31	1.9	2.0	1.4	19	3	130	23	2	0.8	0.9	16	INT L
		30	133	48.89	19	25.45	155	16.13	7.63	2.0	1.6	1.4	15	3	171	15	2	1.1	0.7	14	INT L	
		30	2	3	45.26	19	26.12	155	18.09	7.13	1.8	1.3	1.2	16	4	165	12	2	0.9	0.6	15	INT L
		30	237	5.81	19	27.25	155	31.13	13.88	2.0	1.5	1.6	40	7	36	12	5	0.4	0.3	35	DML	
		30	253	44.92	19	23.41	155	18.44	11.17	2.5	2.5	1.5	17	3	72	15	2	0.9	1.1	15	INT L	
		30	312	7.52	19	24.84	155	17.43	8.67	2.1	1.4	1.4	13	2	80	12	2	0.8	0.9	14	INT L	
		30	349	34.45	19	26.18	155	16.54	9.54	1.8	1.2	1.2	17	3	129	16	2	1.4	0.7	1	INT L	
		30	4	7	59.26	19	23.49	155	18.79	8.55	1.7	1.2	1.1	18	5	75	15	2	0.7	0.9	14	INT L
		30	451	46.36	19	24.42	155	14.85	8.75	2.1	1.8	1.5	12	5	130	12	1	2.1	1.1	2	INT L	
		30	558	32.01	19	26.46	155	15.46	9.37	2.1	2.0	1.3	10	3	189	11	3	1.7	1.7	1	INT L	
		30	7	1	9.45	19	26.18	155	16.69	12.24	1.9	1.4	1.5	11	3	124	08	2	2.2	0.8	1	INT L
		30	815	59.21	19	26.89	155	14.33	2.27	1.9	2.1	1.4	6	0	232	05	4	1.3	0.9	0	SNC L	
		30	917	12.29	19	25.72	155	29.41	11.14	1.9	1.4	1.4	23	2	62	08	6	0.4	0.8	18	KAO	
		30	10	6	7.70	19	30.34	155	18.63	6.00	1.9	1.9	1.2	5	4	337	03	9	5.7	11.3	1	GLN L
		30	1116	32.54	19	26.72	155	22.03	4.71	1.8	2.2	1.2	10	3	312	06	8	2.2	9.4	2	KAO L	
		30	1154	14.84	19	25.07	155	16.82	12.71	2.2	2.4	1.3	13	4	122	12	1	2.1	0.9	1	INT L	
30	1329	19.12	19	25.36	155	15.72	17.97	2.2	2.5	1.3	12	0	137	05	3	2.6	3.7	1	DEP L			
30	1348	59.17	19	27.12	155	16.72	8.00	1.9	2.0	1.2	10	3	134	07	1	1.0	1.0	0	INT L			
30	1524	34.06	19	21.18	155	21.93	5.03	1.8	1.7	0.9	8	1	243	09	9	1.5	13.8	1	SWR L			
30	1551	7.37	19	22.83	155	17.53	6.77	1.7	2.0	1.3	11	2	166	13	2	0.9	1.6	1	INT L			
30	1745	25.78	19	21.51	155	21.69	5.65	1.9	1.9	1.0	8	2	314	11	10	2.0	10.0	1	SWR L			
30	1955	33.55	19	20.32	155	9.66	9.90	1.5	1.4	1.5	25	1	119	10	3	0.8	1.2	20	SF3			
30	2351	12.35	19	25.08	155	17.81	5.40	1.5	1.5	1.2	8	0	86	10	3	1.0	2.1	9	INT L			
31	438	50.60	19	15.04	155	27.01	8.39	1.3	1.4	1.9	5	85	15	5	0.5	0.1	14	LSW				
31	5	14	6.60	19	24.56	155	16.85	12.31	2.0	2.3	1.4	14	4	84	07	1	0.9	0.8	13	INT L		
31	1413	48.58	19	22.21	155	2.42	7.98	1.7	1.7	1.7	43	5	129	13	4	0.5	0.4	39	SF5			
31	1625	19.65	19	21.10	154	45.76	13.39	1.7	1.7	38	1	286	23	15	3.3	0.8	37	LER				
31	1658	36.36	19	11.60	155	30.64	49.88	2.7	3.2	2.6	59	13	87	11	6	0.7	0.9	47	DLS			
31	2134	17.28	19	18.96	155	13.30	6.48	1.4	1.3	1.3	33	6	78	11	4	0.5	0.27	SF2				
31	2259	40.14	19	19.37	155	8.98	8.15	2.2	2.8	2.1	48	5	85	12	4	0.5	0.5	49	SF4			

1989 HVO EARTHQUAKE SUMMARY LIST

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ORIGIN TIME				LAT N		LON W		DEPTH AMP		DUR		CD		GAP RMS MIN ERH			ERZ NO					
YEAR	MON	DA	HRMN	SEC	DEG	MIN	DEG	MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	KM FM	RMK			
1989	AUG	1	639	55.97	19	19.46	155	8.21	8.15	1.6	1.6	41	6	89	11	4	0.4	0.5	35	SF4		
		1	827	48.65	19	18.82	155	47.55	10.44	1.3	1.5	25	2	122	15	10	0.6	0.9	24	KON		
		1	1835	38.38	19	20.19	155	11.80	7.63	1.8	1.8	1.7	31	3	79	0.9	5	0.4	0.7	10	SF3	
		1	19	4	35.71	19	21.93	155	5.10	7.37	1.6	1.7	1.8	35	0	77	1.3	5	0.4	0.9	23	SF5
		2	342	16.53	19	49.55	156	14.30	37.69	2.6	2.5	2.1	51	9	266	1.5	45	0.9	1.1	46	HUA	
		2	10	0	49.76	19	13.00	155	15.80	44.53	2.5	2.7	2.4	51	9	179	0.9	8	0.7	0.7	42	DEP
		2	10	2	32.96	19	13.15	155	15.08	46.51	2.1	1.9	28	1	180	1.3	8	1.2	1.5	27	DEP	
		2	10	3	9.25	19	13.63	155	16.67	41.20	1.8	1.7	29	4	184	0.9	8	1.3	1.1	24	DEP	
		2	10	7	37.09	19	15.38	155	10.74	49.14	2.0	1.5	18	3	228	1.2	6	1.7	1.3	14	DEP	
		2	1025	57.67	19	19.75	155	8.17	8.83	1.2	1.4	20	3	87	0.8	4	0.5	0.9	18	SF4		
2	1251	22.87	19	21.02	155	30.09	9.52	2.1	2.3	2.0	41	3	45	1.1	5	0.4	0.6	39	RAO			
		2	1354	45.29	19	25.93	155	27.43	7.84	1.5	1.4	1.4	22	4	66	0.8	4	0.3	0.8	19	KEA	
		2	1848	17.40	19	50.49	155	11.13	38.88	1.8	23	4	257	0.9	40	1.8	1.7	1.9	KEA			
		3	355	44.02	19	21.46	155	4.79	8.16	1.7	1.7	1.8	48	5	85	1.6	4	0.5	0.4	44	SF5	
		3	7	8	51.89	19	25.01	155	16.03	5.82	1.5	1.7	1.0	18	2	113	1.5	2	0.8	0.6	16	INT
		3	755	23.33	19	19.81	155	10.77	8.52	2.6	3.0	2.9	49	7	91	1.2	4	0.4	0.3	48	SF3	
		3	1130	10.96	19	26.57	155	18.21	3.60	1.8	2.5	1.3	10	0	173	0.4	2	0.9	0.6	1	SNC	
		3	1436	13.98	19	34.48	155	53.19	8.15	1.4	1.4	1.5	1	255	0.9	10	1.9	0.9	9	KON		
		3	18	0	29.46	19	24.25	155	17.32	2.23	2.1	2.4	1.6	25	7	57	1.0	1	0.3	0.2	15	SSC
		3	1848	36.37	19	12.28	155	32.59	6.70	1.4	1.6	27	2	131	1.6	7	0.5	1.8	13	LSW		
3	22	3	22	3	26.22	19	29.03	155	16.15	5.93	1.7	1.5	1.1	11	4	314	1.5	7	2.2	4.8	7	GLN
		4	124	30.30	19	21.34	155	4.84	7.41	1.8	2.4	1.9	35	3	89	1.2	4	0.4	0.8	34	SF5	
		4	540	50.33	19	26.00	155	16.35	15.47	2.4	2.3	1.5	18	5	133	1.0	2	1.5	0.7	11	DEP	
		4	754	12.29	19	20.43	155	12.87	8.14	1.4	1.5	1.4	22	2	67	0.8	4	0.5	0.9	22	SF2	
		4	759	49.12	19	25.84	155	16.93	12.53	2.5	2.9	1.5	22	7	109	1.0	1	0.9	0.6	12	INT	
		4	9	8	34.77	19	18.10	155	22.28	8.21	1.5	1.5	1.3	23	6	107	0.9	4	0.4	0.9	18	SNR
		4	928	26.87	19	22.53	155	26.94	10.98	1.6	1.6	1.3	29	4	71	0.9	1	0.5	0.7	24	RAO	
		4	1148	24.71	19	23.21	155	15.82	8.72	1.8	1.7	1.1	10	3	143	1.4	2	1.1	1.4	1	INT	
		4	1332	19.64	19	25.01	155	16.33	12.66	2.0	2.4	1.3	14	5	134	1.0	1	1.9	0.9	2	INT	
		4	1546	26.50	19	25.43	155	16.56	10.18	1.8	1.6	1.1	17	6	111	0.8	1	1.9	0.5	8	INT	
4	1853	39.87	19	24.61	155	17.16	11.98	2.2	2.9	1.5	16	4	62	1.5	1	1.5	0.7	12	INT			
		4	1927	8.31	19	23.94	155	0.08	7.47	1.8	1.4	1.6	26	4	162	1.2	3	0.5	0.9	21	SF5	
		4	2111	43.20	19	26.17	155	15.68	11.30	2.4	3.1	1.3	17	5	169	1.1	3	1.0	0.5	12	INT	
		5	023	35.48	19	25.80	155	16.46	8.70	1.6	1.6	1.1	12	3	124	0.4	2	1.1	0.6	9	INT	
		5	139	34.56	19	25.81	155	16.96	9.82	2.3	3.1	1.5	25	9	107	1.0	1	0.8	0.6	16	INT	
		5	3	7	10.60	19	25.67	155	16.39	9.59	1.9	2.4	1.2	19	7	124	0.6	2	0.9	0.6	13	INT
		5	413	24.06	19	24.98	155	21.05	9.72	2.0	2.4	1.3	14	4	271	0.8	6	1.7	1.5	13	RAO	
		5	527	0.43	19	19.83	155	8.88	7.01	1.4	1.2	23	4	78	0.8	4	0.5	0.9	19	SF4		
		5	7	40.27	19	24.99	155	17.95	9.36	2.0	2.5	1.3	21	8	83	1.7	1	1.0	0.5	13	INT	
		5	819	47.39	19	24.23	155	0.22	7.83	1.8	1.6	1.6	29	4	154	1.2	3	0.5	0.7	21	SF5	
5	844	47.98	19	25.25	155	16.10	9.49	1.9	2.6	1.4	16	4	120	0.8	2	0.9	0.7	13	INT			
		5	849	15.98	19	20.39	155	4.26	8.35	0.8	1.2	1.4	25	5	118	1.0	3	0.6	0.8	20	SF5	
		5	1052	1.21	19	25.70	155	16.19	8.08	1.7	2.1	1.0	17	6	132	1.0	2	1.1	0.6	10	INT	
		5	1220	9.66	19	18.02	155	14.11	4.11	1.4	1.1	1.2	16	0	111	0.8	2	0.6	1.2	16	SSF	
		5	1459	4.86	19	25.58	155	16.48	8.59	1.7	2.1	1.2	12	3	119	1.0	2	0.9	1.3	8	INT	
		5	1520	1.21	19	25.70	155	16.19	8.08	1.7	2.1	1.0	17	6	132	1.0	2	1.1	0.6	10	INT	
		5	1520	9.66	19	18.02	155	14.11	4.11	1.4	1.1	1.2	16	0	111	0.8	2	0.6	1.2	16	SSF	
		5	1459	4.86	19	25.58	155	16.48	8.59	1.7	2.1	1.2	12	3	119	1.0	2	0.9	1.3	8	INT	
		5	1520	1.21	19	25.70	155	16.19	8.08	1.7	2.1	1.0	17	6	132	1.0	2	1.1	0.6	10	INT	
		5	1520	9.66	19	18.02	155	14.11	4.11	1.4	1.1	1.2	16	0	111	0.8	2	0.6	1.2	16	SSF	

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1989 HVO EARTHQUAKE SUMMARY LIST

ORIGIN TIME				LAT N		LON W		DEPTH AMP		CD		GAP RMS MIN ERH				ERZ NO						
YEAR	MON	DA	HRMN	SEC	DEG	MIN	DEG	MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	KM	FM	RMK		
1989	AUG	5	17	9	43.15	19	25.21	155	15.56	9.76	1.7	1.1	19	7	136	1.5	2	1.1	0.8	11	INT L	
		5	1710	9.01	19	25.29	155	17.31	13.27	2.6	3.3	1.5	18	7	89	0.9	1	1.2	0.5	12	DEP L	
		5	1737	20.08	19	24.95	155	16.79	13.86	2.1	2.2	1.2	16	4	94	0.9	0	1.4	0.7	10	DEP L	
		5	1814	56.17	19	24.42	155	15.34	9.96	1.9	1.9	1.2	15	4	131	0.9	2	1.1	0.8	12	INT L	
		5	1842	44.93	19	26.11	155	16.35	7.95	1.7	2.2	1.2	16	5	136	1.1	3	0.8	1.1	11	INT L	
		5	1847	9.73	19	19.27	155	8.60	7.71	1.2	1.3	27	4	82	0.8	4	0.5	0.8	22	SF4		
		5	19	0	4.52	19	23.79	155	16.25	12.21	1.9	2.2	1.1	15	5	68	1.2	1	1.6	0.6	9	INT L
		5	1922	17.36	19	22.34	155	2.68	9.41	2.0	2.0	1.8	22	8	122	0.8	4	0.5	0.7	13	SF5	
		5	1956	12.53	19	25.77	155	16.94	12.18	1.9	2.3	1.3	19	6	107	1.2	1	1.4	0.7	11	INT L	
		5	21	0	39.92	19	18.32	155	14.06	9.26	2.3	2.8	2.4	42	5	137	1.1	7	0.5	0.6	37	SF2
		5	2130	19.65	19	25.58	155	17.08	10.97	1.9	1.6	1.0	19	6	100	1.3	1	1.5	0.7	10	INT L	
		5	2213	33.00	19	24.97	155	15.70	8.37	1.8	2.1	1.2	19	8	120	0.8	2	0.8	0.5	12	INT L	
		5	2312	46.52	19	17.95	155	14.17	4.64	1.4	1.3	1.2	21	3	116	0.9	2	0.5	1.1	18	SSF	
		5	2322	18.42	19	18.05	155	14.18	5.35	1.6	1.8	1.5	27	2	113	1.1	2	0.5	1.1	24	SF2	
		5	2325	24.96	19	18.18	155	14.06	8.88	2.0	2.1	1.8	37	4	139	1.1	7	0.5	0.8	33	SF2	
		6	0	4	45.59	19	20.07	155	21.58	29.70	2.7	3.1	2.8	68	18	75	1.2	3	0.5	0.6	49	DEP
		6	039	27.89	19	22.77	155	18.02	10.41	2.5	2.8	1.5	12	2	124	1.0	2	0.9	1.7	8	INT L	
		6	042	52.61	19	25.53	155	15.90	11.61	2.2	2.4	1.6	14	3	184	1.0	2	1.8	1.4	4	INT L	
		6	359	55.92	19	26.60	155	16.22	8.74	2.1	2.9	1.3	19	6	147	0.8	2	0.8	0.6	14	INT L	
		6	516	32.16	19	26.86	154	54.67	6.03	1.1	1.4	1.5	28	5	149	1.1	2	0.6	0.5	23	LER	
		6	743	11.01	19	23.89	155	16.83	12.42	1.8	2.0	1.2	20	7	69	1.7	0	1.5	0.8	11	INT L	
		6	855	27.20	19	26.14	155	14.94	12.47	2.2	2.7	1.4	19	6	198	1.4	3	1.6	0.8	1	INT L	
		6	924	49.11	19	19.49	155	8.94	6.85	1.9	2.2	2.0	39	2	84	1.3	4	0.5	1.0	26	SF4	
		6	13	0	20.53	19	15.83	155	25.92	10.72	1.5	1.5	1.7	2	68	0.9	4	0.5	1.0	10	LSW	
		6	18	5	18.94	19	26.89	155	18.68	9.26	2.4	3.1	1.6	16	2	120	1.0	3	0.8	0.4	2	INT L
		6	18	9	4.66	19	25.34	155	16.06	10.99	2.2	2.8	1.5	18	3	124	1.0	2	1.2	0.7	5	INT L
		6	1819	38.33	19	26.18	155	16.23	9.28	1.7	1.6	1.2	12	3	143	0.9	3	0.9	0.9	1	INT L	
		6	1857	27.58	19	26.11	155	16.41	4.86	1.9	2.7	1.6	13	3	134	1.2	2	0.6	1.0	1	SNC L	
		6	1923	40.64	19	29.34	155	16.13	25.15	1.7	1.6	1.5	44	6	94	1.0	3	0.6	0.8	33	DEP	
		6	1942	39.30	19	18.05	155	15.83	11.13	2.0	1.9	1.2	9	1	299	0.9	8	3.9	2.1	1	SFL L	
		6	1953	28.56	19	26.25	155	20.03	8.75	1.7	1.6	1.2	29	7	89	1.1	3	0.4	0.7	12	RAO	
		6	20	8	48.32	19	26.91	155	30.14	9.74	1.6	1.6	1.6	37	6	45	1.0	6	0.3	0.6	18	RAO
		6	2045	38.82	19	23.08	155	18.45	8.85	1.8	2.1	1.1	12	4	230	1.0	3	2.2	1.4	4	INT L	
		6	2131	17.39	19	23.68	155	17.14	10.74	1.9	2.1	1.3	16	4	61	0.9	1	1.0	0.9	9	INT L	
		6	223	3	48.30	19	25.85	155	16.23	10.55	2.4	3.0	1.7	14	4	135	0.7	2	1.0	0.8	12	INT L
		6	23	9	11.35	19	25.66	155	17.10	12.71	1.9	2.2	1.3	20	7	100	1.0	1	1.1	0.6	12	INT L
		7	014	1.46	19	24.66	155	15.50	8.58	1.8	1.7	1.1	15	3	148	1.3	2	0.9	0.8	13	INT L	
		7	048	36.77	19	26.21	155	15.67	10.21	1.9	2.4	1.3	17	5	171	1.3	3	1.1	0.7	12	INT L	
		7	118	11.28	19	25.11	155	17.42	9.58	2.4	3.1	1.6	17	5	84	1.1	1	0.9	0.4	13	INT L	
		7	151	6.76	19	26.06	155	15.35	11.19	1.8	1.6	1.1	16	6	181	0.6	3	1.2	0.6	11	INT L	
		7	3	2	46.60	19	21.36	155	7.94	9.40	1.2	1.4	26	4	74	0.7	4	0.5	0.7	24	SF4	
		7	312	27.04	19	26.01	155	16.35	10.99	2.1	2.7	1.4	20	7	134	0.8	2	1.3	0.5	11	INT L	
		7	4	21.88	19	24.38	155	16.69	11.67	2.6	3.0	1.7	15	4	82	1.3	1	1.5	1.0	13	INT L	
		7	4	37.10	19	25.45	155	16.09	7.02	2.3	2.5	1.7	15	3	127	1.0	2	0.7	0.8	13	INT L	
		7	417	4.32	19	25.33	155	16.62	9.57	2.1	2.5	1.4	19	6	112	1.2	1	0.8	0.4	13	INT L	





## 1989 HVO EARTHQUAKE SUMMARY LIST

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YEAR	MON	DA	HRMM	SEC	LAT N	DEG MIN	ION W	DEPTH	AMP	DUR	CD	MAG	MAG	NR	NS	DEG	SEC	DIS	RM	ERH	MIN	RMK
ORIGIN TIME								KM														
1989	AUG	21	338	34.62	19	19.98	155	6.66	7.08	1.2	1.4	32	5	114	.10	5	0.4	0.6	32	SF4		
		21	6	3	5.64	19 24.29	155 18.02	6.27	1.9	2.7	1.3	14	1	87	.12	2	0.5	0.8	17	INT	L	
		21	638	10.09	19	24.45	155 0.96	7.44	2.2	2.6	2.2	45	6	131	.15	4	0.6	0.4	40	SF5		
		21	8	1	3.51	19 20.47	155 4.38	7.65	2.0	1.9	41	2	116	.10	3	0.4	0.5	41	SF5			
		21	8	1	31.51	19 20.20	155 4.71	7.68	1.7	1.6	1.6	30	6	128	.13	3	0.4	0.6	28	SF5		
		21	1016	47.75	19	10.71	155 29.94	12.05	1.9	2.0	1.7	40	4	147	.12	8	0.6	0.5	38	LSW		
		21	1116	25.62	19	25.33	155 15.21	11.47	2.6	3.1	1.6	17	2	151	.13	2	1.1	0.9	18	INT	L	
		21	1124	33.21	19	21.85	155 5.13	7.38	1.2	1.4	36	6	78	.12	5	0.5	0.4	31	SF5			
		21	1135	55.91	19	25.83	155 16.68	9.51	2.3	3.0	1.6	14	5	117	.08	2	1.3	0.8	13	INT		
		21	1147	45.38	19	23.68	155 17.59	8.97	1.9	2.4	1.2	17	6	61	.09	1	0.8	0.6	12	INT	L	
		21	1150	22.87	19	20.42	155 6.06	6.85	1.6	1.4	23	6	112	.12	6	0.5	0.9	17	SF4			
		21	1210	31.55	19	17.06	155 19.38	8.12	1.4	1.2	21	4	149	.07	2	0.5	0.9	17	SWR			
		21	1257	9.82	19	19.57	155 11.90	9.31	2.4	2.9	2.4	40	8	91	.10	5	0.4	0.6	35	SF3		
		21	1355	51.76	19	22.02	154 59.59	7.04	2.3	2.5	2.1	32	4	191	.10	6	0.7	0.8	28	LER		
		21	1411	48.91	19	23.08	155 2.85	9.28	2.0	1.9	1.8	30	6	120	.10	3	0.4	0.5	26	SF5		
		21	1521	37.32	19	24.00	155 16.83	12.30	2.6	3.1	1.8	17	3	71	.22	0	1.5	1.2	2	INT	L	
		21	1553	51.47	19	18.01	155 13.39	6.95	1.8	1.8	1.7	39	5	88	.10	2	0.4	0.7	22	SF2		
		21	1614	35.26	19	22.91	155 11.90	10.27	2.1	2.4	1.3	18	4	70	.22	1	1.3	1.5	1	INT	L	
		21	1649	13.77	19	26.14	155 16.77	12.69	2.2	2.7	1.4	10	3	119	.15	2	2.9	1.0	1	INT	L	
		21	1734	26.58	19	19.04	155 9.87	8.43	1.5	1.7	1.6	20	1	108	.05	5	0.5	1.0	10	SF3		
		21	1738	43.42	19	23.77	155 17.78	6.86	2.0	2.3	1.3	13	1	94	.08	2	0.7	1.2	1	INT	L	
		21	1847	21.85	19	25.23	155 17.61	10.76	2.3	2.8	1.5	20	5	81	.13	0	1.0	0.6	2	INT	L	
		21	1940	45.62	19	25.43	155 16.06	11.33	2.3	2.7	1.5	18	4	127	.12	3	0.9	0.6	1	INT	L	
		21	2032	50.86	19	25.98	155 16.63	11.19	2.3	3.0	1.5	22	5	121	.11	2	0.9	0.7	2	INT	L	
		21	2035	33.09	19	18.76	155 12.78	8.67	1.8	2.3	1.7	38	2	94	.11	3	0.5	0.6	31	SF2		
		21	2114	29.17	19	24.03	155 17.38	10.20	2.2	2.7	1.4	22	5	55	.15	1	0.9	0.7	17	INT	L	
		21	2121	58.98	19	20.50	155 11.76	8.06	1.4	1.7	1.4	43	7	74	.13	4	0.4	0.4	39	SF3		
		21	2149	39.40	19	24.28	155 16.60	10.82	2.3	2.9	1.5	21	5	80	.10	1	0.7	0.6	17	INT	L	
		21	2159	3.62	19	20.01	155 4.60	6.57	1.6	1.5	36	6	136	.14	3	0.5	0.7	31	SF5	L		
		21	2235	3.96	19	24.90	155 17.11	10.25	2.2	3.0	1.5	23	6	83	.12	0	0.9	0.5	17	INT	L	
		21	2349	39.09	19	24.20	155 17.22	12.10	2.3	2.9	1.5	18	3	64	.13	1	1.0	0.9	15	INT	L	
		22	017	56.33	19	13.22	155 30.73	7.64	1.8	1.4	1.6	40	2	69	.15	4	0.4	0.6	39	LSW		
		22	044	57.46	19	23.81	155 17.14	11.38	2.2	2.8	1.4	24	4	65	.14	1	0.6	0.6	21	INT	L	
		22	138	16.65	19	19.28	155 9.00	7.60	1.6	1.9	1.4	40	8	90	.13	4	0.4	0.6	33	SF4		
		22	2	6	1.69	19 23.48	155 18.54	7.42	2.2	2.7	1.5	23	5	53	.13	2	0.5	0.8	18	INT	L	
		22	214	15.97	19	19.44	155 13.20	6.82	1.4	1.7	1.4	40	5	75	.13	5	0.4	0.5	36	SF2		
		22	240	32.02	19	28.05	154 53.74	5.32	1.0	1.2	1.5	31	7	170	.18	3	0.6	0.8	25	LER		
		22	427	16.27	19	25.34	155 15.35	3.89	2.1	2.5	1.5	19	2	151	.12	2	0.6	0.5	17	SNC	L	
		22	628	29.79	19	24.27	155 18.04	9.05	1.9	2.0	1.2	19	3	60	.19	2	0.8	1.1	16	INT	L	
		22	839	44.80	19	24.88	155 16.95	9.24	2.3	2.9	1.7	25	4	89	.13	0	0.6	0.4	23	INT	L	
		22	852	10.45	19	24.79	155 15.62	7.93	1.8	1.8	1.1	17	4	113	.12	2	1.0	0.7	16	INT	L	
		22	936	57.91	19	25.77	155 17.17	12.85	2.1	2.1	1.4	15	3	167	.14	1	1.3	0.7	14	INT	L	
		22	1019	27.38	19	20.80	155 6.29	7.26	1.6	1.2	1.4	28	4	100	.13	5	0.5	0.8	24	SF4		
		22	1214	0.76	19	25.22	155 13.38	8.96	2.1	2.4	1.5	14	7	271	.09	2	1.2	1.8	10	SF2	L	
		22	1614	23.14	19	18.37	155 15.11	5.67	1.4	1.3	1.3	30	1	103	.11	4	0.4	1.2	12	SF1		

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## 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	DEG MIN	LON W	DEG MIN	DEPTH ANP		CD	GAP			RMS	MIN	ERH	ERZ NO					
			HRMM	SEC					KM	MAG		MAG	NR	NS					DEG	SEC	DIS	KM	FM
1989	AUG	22	1751	57.76	19	23.22	155	17.54	19.75	2.5	3.2	1.5	10	1	167	.25	1	4.5	5.7	0	DEP	L	
		22	1835	43.08	19	22.39	155	4.77	7.67	0.8	1.2	1.4	24	0	81	.12	4	0.5	1.0	13	SF5		
		22	1916	59.72	19	26.07	155	17.45	14.70	2.4	2.5	1.5	14	2	92	.11	1	1.7	1.4	0	DEP	L	
		22	2124	22.63	19	23.81	155	17.72	7.49	2.2	2.3	1.1	20	4	61	.14	2	0.6	0.7	17	INT	L	
		22	2233	31.44	19	25.03	155	18.69	13.51	2.0	2.4	1.3	17	2	96	.14	2	1.0	0.9	18	DEP	L	
		22	2356	42.68	19	24.54	155	16.90	7.57	2.5	3.1	1.7	25	3	58	.12	1	0.4	0.5	22	INT	L	
		23	0	54.84	19	24.41	155	16.85	10.61	1.7	1.6	1.1	20	4	81	.14	1	0.9	0.7	16	INT	L	
		23	016	13.84	19	23.63	155	18.68	9.68	2.1	2.4	1.3	18	3	71	.19	2	0.9	1.3	16	INT	L	
		23	036	34.60	19	24.68	155	17.01	8.75	1.9	2.1	1.2	18	4	85	.17	0	1.0	0.6	15	INT	L	
		23	123	30.33	19	23.32	155	17.72	9.09	1.8	1.9	1.1	18	4	91	.13	1	0.9	0.9	15	INT	L	
		23	217	44.26	19	24.74	155	16.81	10.13	2.5	3.1	1.5	23	4	89	.11	0	0.7	0.5	19	INT	L	
		23	440	57.17	19	25.10	155	16.47	13.96	2.6	3.2	1.8	21	3	70	.15	1	0.9	0.8	19	DEP	L	
		23	454	6.20	19	23.44	155	17.83	8.02	2.0	2.4	1.4	19	5	92	.12	2	0.7	0.8	16	INT	L	
		23	538	41.02	19	59.32	156	31.01	31.16	2.1	1.9	26	2	320	.12	78	2.2	4.8	25	DIS			
		23	6	12.90	19	24.39	155	17.70	8.50	1.7	1.6	1.0	17	2	56	.17	2	0.7	0.9	16	INT	L	
		23	832	41.95	19	24.39	155	17.35	8.83	2.4	2.9	1.6	26	5	52	.11	1	0.7	0.4	22	INT	L	
		23	918	21.97	19	24.57	155	17.47	12.66	2.1	2.0	1.4	17	6	83	.13	1	1.7	0.7	10	INT	L	
		23	1044	57.97	19	23.28	155	19.15	13.80	2.3	2.5	1.5	12	4	190	.10	4	2.2	1.1	11	DML	L	
		23	1110	25.10	19	11.27	155	47.16	28.91	2.7	2.9	2.3	54	7	164	.13	13	0.6	1.2	47	KON		
		23	1151	23.49	20	15.82	155	43.82	43.13	1.4	2.0	1.8	10	1	312	.09	46	2.8	2.3	3	KOH		
		23	12	8	11.29	19	25.12	155	16.23	13.66	2.1	1.8	1.4	18	6	112	.13	1	1.6	0.7	12	DEP	L
		23	1352	44.89	19	21.38	155	13.98	17.50	2.6	2.5	1.6	10	0	216	.15	3	3.4	4.0	0	DEP	L	
		23	1550	13.15	19	23.31	155	19.36	7.80	2.4	2.5	1.1	12	2	229	.10	1	1.0	1.3	0	KAO	L	
		23	1613	29.01	19	20.32	155	4.23	6.03	1.7	1.6	1.8	36	0	122	.11	2	0.5	1.0	24	SF5		
23	1717	49.73	19	30.11	155	18.64	9.86	1.8	1.4	1.3	13	3	234	.13	6	1.2	1.0	0	GIN	L			
23	1913	11.31	19	27.43	155	14.04	5.97	2.0	1.7	1.6	7	0	274	.11	5	3.3	5.3	1	INT	L			
23	2015	3.63	19	24.60	155	18.97	8.89	2.1	2.3	1.4	13	3	114	.16	2	1.4	1.2	1	INT	L			
23	22	8	31.49	19	25.07	155	16.47	7.65	1.7	1.8	1.1	21	5	153	.14	1	0.9	0.4	18	INT	L		
23	2338	25.28	19	23.83	155	18.76	5.69	2.1	2.1	1.4	19	4	52	.13	3	0.6	1.1	18	INT	L			
24	241	34.04	19	23.72	155	17.59	4.75	2.3	2.8	1.7	19	3	59	.12	1	0.4	0.6	18	SSC	L			
24	335	34.21	19	24.78	155	16.69	6.22	1.9	2.3	1.2	18	3	92	.15	1	0.7	0.6	16	INT	L			
24	428	8.82	19	27.45	155	29.49	10.55	1.9	1.5	1.5	45	6	48	.13	8	0.3	0.5	40	KAO				
24	618	12.92	19	25.39	155	16.51	8.79	2.1	2.5	1.5	18	2	112	.12	1	0.9	0.5	16	INT	L			
24	815	57.43	19	24.29	155	17.69	6.99	2.0	2.4	1.4	20	4	45	.13	2	0.6	0.7	17	INT	L			
24	9	29.95	19	17.94	155	13.34	8.32	2.2	2.5	2.3	51	8	92	.13	2	0.4	0.3	47	SF2				
24	912	39.74	19	27.08	154	56.26	6.06	1.6	1.6	1.6	25	1	137	.11	2	0.6	0.8	9	LER				
24	10	9	19.99	19	16.90	154	59.28	40.31	2.6	2.6	2.1	51	2	210	.11	8	1.1	1.1	45	LER			
24	1018	52.83	19	24.22	155	16.42	10.07	2.1	2.8	1.2	9	0	120	.13	1	1.4	2.8	0	INT	L			
24	12	2	0.46	19	25.43	155	19.18	9.81	2.5	3.1	1.7	12	3	110	.07	3	1.0	1.0	10	KAO	L		
24	1247	51.60	19	26.57	155	15.61	6.56	1.9	2.2	1.4	15	1	186	.13	3	0.9	1.4	1	INT	L			
24	1728	28.37	19	59.57	155	37.49	0.50	2.4	3.2	1.6	18	3	165	.12	22	0.7	0.6	10	KOH				
24	1835	13.71	19	19.64	155	11.81	8.36	1.8	2.0	1.7	42	4	89	.11	6	0.4	0.6	24	SF3				
24	2014	24.15	19	24.70	155	18.47	3.00	1.6	2.2	1.1	11	1	98	.08	3	0.4	0.6	0	SNC	L			
24	2227	17.69	19	24.03	155	17.71	6.84	2.1	2.4	1.4	21	2	45	.17	2	0.5	0.8	19	INT	L			
24	23	6	37.77	19	23.03	155	3.00	7.86	0.8	1.2	1.4	32	3	110	.13	2	0.4	0.6	32	SF5	L		

## 1989 HVO EARTHQUAKE SUMMARY LIST

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YEAR	MON	DA	ORIGIN TIME		LAT N	DEG MIN	ION W	DEPTH		AMP	DUR	CD	GAP			RMS	MIN	ERH	ERZ	NO		
			HRMN	SEC				KM	MAG				KM	MAG	NR						NS	DEG
1989	AUG	25	042	22.87	19	23.42	155 18.45	7.42	2.0	2.4	1.2	19	4	53	15	3	0.7	1.2	17	INT L		
		25	220	29.35	19	24.98	155 16.84	6.92	1.7	1.5	1.1	18	2	148	13	0	0.8	0.5	17	INT L		
		25	6	7	42.88	19	16.01	7.38	2.0	2.0	1.6	34	4	55	15	2	0.4	0.6	30	LSW		
		25	7	6	1.06	19	24.45	7.69	2.2	2.7	1.5	22	5	49	12	1	0.6	0.5	18	INT L		
		25	719	6.42	19	24.83	155 16.71	6.77	1.5	1.5	1.1	18	2	93	10	1	0.6	0.5	18	INT L		
		25	746	11.62	19	24.51	155 18.45	8.28	1.8	2.1	1.3	18	2	61	14	2	0.6	1.0	17	INT L		
		25	836	31.78	19	51.85	155 32.75	20.15	2.1	1.9	1.6	31	6	204	12	13	0.8	1.2	25	KEA		
		25	10	0	2.45	19	44.10	155	2.63	0.00	2.2	9	1.8	24	0	247	20	34	2.3	3.4	7	HIL B
		25	1140	8.04	19	25.76	155 17.23	10.06	2.1	2.8	1.5	14	2	97	13	1	1.4	1.1	1	INT L		
		25	1453	54.10	19	24.35	155 16.76	12.45	2.5	2.9	1.7	16	3	80	13	1	1.2	0.8	13	INT L		
		25	1536	3.50	19	24.33	155 17.17	12.87	2.0	1.6	1.3	14	3	67	13	1	1.5	1.0	11	INT L		
		25	1650	6.99	19	24.86	155 15.68	10.79	2.0	2.3	1.2	13	4	171	08	2	1.4	0.7	12	INT L		
		25	2016	14.81	19	24.82	155 16.95	14.19	2.2	2.5	1.5	15	3	88	08	0	1.0	1.2	12	DEP L		
		25	2251	44.56	19	24.53	155 16.49	14.26	1.9	1.6	1.2	14	3	135	12	1	1.6	0.9	12	DEP L		
		26	013	18.14	19	24.25	155 17.04	10.04	2.0	2.4	1.1	14	2	75	07	1	0.9	0.6	12	INT L		
		26	048	54.34	19	20.41	155	5.76	9.14	1.7	1.7	1.7	33	6	115	09	5	0.4	0.6	31	SF4	
		26	2	17.21	19	20.01	155 12.89	7.90	0.9	1.2	1.1	20	2	72	06	5	0.5	1.1	17	SF2		
		26	2	53.13	19	25.28	155 19.53	7.70	1.7	1.4	1.0	27	5	72	11	3	0.4	0.8	22	RAO		
		26	220	24.04	19	24.71	155 20.03	7.06	1.8	2.1	1.2	12	4	254	07	4	1.6	1.4	9	RAO L		
		26	431	38.64	19	23.54	155 15.12	9.18	2.4	2.7	1.6	14	3	180	09	3	1.1	0.8	13	INT L		
		26	444	48.50	19	25.71	155 16.79	12.59	1.9	1.6	1.2	17	4	111	08	2	1.0	0.8	12	INT L		
		26	1237	44.80	19	20.43	155 11.47	8.40	2.1	2.7	2.1	44	5	78	12	4	0.5	0.6	40	SF3		
		26	14	1	45.15	19	24.53	155 17.61	13.68	1.9	2.4	1.1	14	3	85	12	1	1.7	0.9	12	DEP L	
		26	1420	40.61	19	21.53	155	5.08	9.09	2.9	3.4	3.3	50	8	85	10	5	0.3	0.3	45	SF5	
		26	1729	21.85	19	16.04	154 59.14	44.09	1.6	1.7	1.8	44	4	214	11	10	1.3	1.1	41	LER		
		26	1757	57.85	19	25.95	155 16.52	10.93	2.3	1.6	1.6	4	125	12	2	1.4	0.9	13	INT L			
		26	18	6	36.47	19	19.66	155 11.74	6.08	1.9	2.1	1.6	32	4	90	12	6	0.4	1.2	27	SF3	
		26	1816	39.84	19	25.34	155 15.54	9.28	2.3	3.0	1.5	16	5	142	13	2	1.0	0.8	13	INT L		
		26	23	7	28.39	19	27.05	155 29.24	9.84	2.1	1.8	1.7	45	8	46	11	8	0.3	0.6	24	RAO	
		27	445	46.00	19	23.05	155 18.55	5.05	1.7	2.3	1.2	11	1	98	08	3	0.6	1.7	13	INT L		
		27	7	1	11.18	19	24.80	155 16.91	14.19	1.9	1.0	14	2	88	08	0	1.2	1.5	11	DEP L		
		27	712	59.63	19	25.24	155 17.20	11.99	1.6	1.8	1.1	14	3	91	10	1	1.1	1.1	10	INT L		
		27	9	1	24.49	19	20.70	155	4.97	6.31	1.3	1.4	1.4	25	0	107	12	3	0.6	1.4	16	SF5
		27	926	5.97	19	19.82	155	9.08	7.00	1.5	1.5	1.6	34	3	80	11	4	0.5	0.8	21	SF4	
		27	1148	33.56	19	21.12	155 10.70	8.85	1.2	1.4	28	4	93	09	2	0.4	0.5	16	SF3			
		27	1210	31.34	19	24.25	155 17.82	6.48	1.5	1.5	1.0	17	4	58	16	2	0.7	0.7	14	INT L		
		27	1214	37.48	19	24.78	155 17.73	8.36	1.9	2.5	1.4	19	4	62	18	1	0.8	0.8	16	INT L		
		27	1220	10.84	19	24.04	155 17.25	8.05	2.1	2.2	1.4	20	5	61	15	1	0.7	0.7	16	INT L		
		27	1227	31.82	19	23.49	155 18.29	7.12	1.8	1.5	1.1	14	3	98	10	2	0.7	1.0	13	INT L		
		27	1236	56.46	19	24.50	155 16.69	7.72	1.9	2.0	1.3	18	3	82	15	1	0.8	0.6	15	INT L		
		27	1239	51.34	19	20.01	155	8.08	7.54	2.2	2.8	2.1	44	4	86	09	5	0.4	0.6	21	SF4	
		27	13	0	28.18	19	24.53	155 17.50	9.13	2.2	2.6	1.5	19	3	54	09	1	0.6	0.8	17	INT L	
		27	1532	2.96	19	23.09	155 14.35	3.90	1.4	1.1	1.4	18	4	103	08	2	0.4	0.4	7	SEC		
		27	1839	47.37	19	24.77	155 16.62	11.02	1.7	1.7	1.0	15	2	93	12	1	1.2	0.7	15	INT L		
		28	0	2	15.62	19	18.03	155 13.30	8.83	1.5	1.6	1.4	33	4	92	11	2	0.5	0.5	30	SF2	

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## 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	HRMN	SEC	LAT N	DEG MIN	LOW W	DEPTH	AMP	DUR	CD	GAP	RMS	MIN	ERH	ERZ	NO				
							DEG MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	FM RMK				
1989	AUG	28	017	57.60	19	25.81	155 15.44	8.32	1.5	1.7	1.0	17	2	167	11	3	0.9	0.7	16	INT L	
		28	325	43.04	19	24.79	155 17.40	7.41	1.6	2.2	1.2	18	2	61	11	1	0.6	0.6	16	INT L	
		28	531	10.86	19	22.61	155 3.36	7.69	0.8	1.4	1.5	33	4	111	14	3	0.4	0.4	31	SF5	
		28	817	29.61	19	21.30	155 6.40	8.71	2.3	2.7	2.2	52	6	88	12	4	0.3	0.3	48	SF4	
		28	949	5.15	19	29.73	155 23.18	14.31	2.1	2.2	1.9	55	16	46	13	0	0.4	0.3	41	DML	
		28	950	12.68	19	27.12	154 53.74	7.35	0.8	1.3	1.6	32	6	149	14	3	0.7	0.5	28	LER	
		28	15	5	45.10	19	25.79	155 18.92	9.83	1.9	1.9	1.0	7	0	146	26	4	2.9	7.8	0	INT L
		28	1818	11.33	19	22.06	155 4.99	6.56	0.8	1.3	1.5	23	0	75	12	5	0.5	1.2	11	SF5	
		28	1854	57.89	19	25.88	155 15.73	11.56	2.0	2.4	1.4	11	1	167	14	3	1.6	0.9	0	INT L	
		28	19	3	22.40	19	24.51	155 15.95	1.63	1.4	1.4	1.0	9	0	94	15	2	0.4	0.8	0	SEC L
		28	1929	20.94	19	24.50	155 14.56	2.86	1.6	1.8	1.2	6	0	190	04	4	1.0	1.4	0	SEC L	
		28	2248	25.36	19	21.21	155 11.34	8.58	2.0	2.1	1.9	56	9	66	13	3	0.3	0.3	50	SF3	
		29	314	44.27	19	23.91	155 17.51	6.60	1.7	1.8	1.1	15	2	84	10	1	0.7	0.7	15	INT L	
		29	414	29.85	19	24.17	155 17.51	6.82	2.1	2.7	1.4	23	4	55	17	2	0.5	0.6	20	INT L	
		29	5	6	21.26	19	24.06	155 18.57	7.98	1.6	1.7	1.0	19	2	66	17	2	0.6	1.0	17	INT L
		29	8	9	41.49	19	24.66	155 15.59	10.90	1.9	1.6	1.2	21	4	106	10	2	0.9	0.6	17	INT L
		29	9	1	8.12	19	24.09	155 19.40	9.89	1.9	1.7	1.2	18	3	63	13	1	0.7	1.2	16	KAOL
		29	1026	22.97	19	24.07	155 16.24	10.92	1.9	1.7	1.2	17	5	77	10	1	1.5	0.7	10	INT L	
		29	1028	0.99	19	20.40	155 6.61	7.84	0.8	1.7	1.4	25	4	105	08	6	0.5	0.9	22	SF4	
		29	1223	57.58	19	24.55	155 17.60	11.63	1.8	1.9	1.3	14	5	85	11	1	1.6	0.9	11	INT L	
		29	1246	29.08	19	24.17	155 17.12	6.05	1.6	1.5	1.2	10	0	80	13	1	1.0	1.5	11	INT L	
		29	1421	56.92	19	23.96	155 16.41	7.19	2.2	2.9	1.6	14	2	72	11	0	0.8	1.0	12	INT L	
		29	1727	14.95	19	26.72	155 18.25	7.35	2.0	2.5	1.0	11	1	123	09	3	0.7	1.5	0	INT L	
		29	1731	31.79	19	24.95	155 14.61	4.81	2.0	2.2	1.4	16	1	156	19	1	1.0	1.2	1	SNC L	
		29	2144	8.51	19	25.08	155 14.54	9.65	2.1	2.2	1.4	20	3	160	13	1	0.9	0.7	18	INT L	
		29	2259	14.94	19	24.75	155 16.38	5.22	1.6	1.7	1.2	18	2	97	12	1	0.6	0.4	18	INT L	
		30	010	52.36	19	24.28	155 18.21	6.46	1.7	2.2	1.2	17	2	57	14	2	0.6	1.0	17	INT L	
		30	223	54.18	19	24.89	155 16.19	8.23	2.4	3.0	1.7	24	4	69	15	1	0.6	0.6	21	INT L	
		30	237	0.77	19	23.74	155 17.42	9.92	2.1	2.1	1.3	17	1	54	21	1	0.9	1.6	17	INT L	
		30	3	9	25.49	19	24.91	155 15.87	9.55	2.0	1.7	1.3	20	3	112	14	2	0.8	0.8	16	INT L
		30	436	16.61	19	25.18	155 17.04	8.02	1.9	2.0	1.4	19	2	94	12	1	0.7	0.6	17	INT L	
		30	6	5	33	19	10.57	155 32.80	1.73	2.2	2.3	2.1	40	4	108	15	9	0.4	0.6	38	LSW
		30	618	9.24	19	24.01	155 16.98	7.40	1.9	2.0	1.4	19	2	71	13	1	0.6	0.8	17	INT L	
		30	655	2.13	19	25.02	155 18.31	8.04	1.7	1.7	1.1	16	1	84	14	1	0.7	0.9	17	INT L	
		30	746	45.37	19	23.02	155 2.84	8.46	2.0	2.0	1.8	40	1	121	14	3	0.6	0.3	36	SF5	
		30	913	39.01	19	24.08	155 18.42	8.19	2.3		1.5	17	3	61	13	3	0.7	1.0	17	INT L	
		30	958	51.93	19	24.84	155 17.31	9.83	1.8	1.9	1.1	19	3	67	15	1	0.9	0.8	17	INT L	
		30	1221	53.39	19	22.05	155 5.28	7.21	2.4	2.6	2.2	44	8	75	12	5	0.4	0.6	36	SF5	
		30	1333	57.38	19	20.40	155 6.72	7.19	0.8	1.6	1.5	25	0	104	11	6	0.5	1.3	15	SF4	
		30	1347	32.03	19	28.32	155 17.85	7.94	2.1	2.7	1.8	10	2	238	24	2	2.2	1.7	1	GLN L	
		30	1353	48.86	19	28.74	155 14.70	1.17	1.6	1.6	1.4	10	3	275	21	8	1.7	1.2	2	GLN L	
		30	1459	8.07	19	25.28	155 16.77	8.16	1.9	2.3	1.4	15	6	103	12	1	1.0	1.0	1	INT L	
		30	1524	35.18	19	23.14	155 2.61	7.05	1.7	1.6	1.6	16	2	125	08	3	0.5	0.8	9	SF5	
		30	1658	38.34	19	26.50	155 10.20	4.53	2.1	1.8	1.5	12	1	291	11	8	1.6	11.6	2	GLN L	
		30	1910	49.03	19	23.68	155 15.81	8.93	2.4	2.9	1.7	17	2	94	14	2	0.8	1.0	0	INT L	

# 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	LON W	DEPTH		AMP	DUR	CD	CAP		RMS	MIN	ERH	ERZ	NO				
			HRMN	SEC			KM	MAG				NR	NS						DEG	SEC	DIS	KM
1989	SEP	5	058	35.33	19	17.64	155	30.87	9.14	1.7	1.6	1.5	41	5	43	.13	5	0.3	0.6	38	LSW	
		5	619	18.02	19	17.34	155	28.87	12.77	1.7	1.8	1.6	35	3	50	.11	5	0.4	0.6	34	LSW	
		5	8	15	13.07	19	24.11	155	17.25	8.00	2.1	2.7	1.3	21	5	62	.12	1	0.7	0.7	16	INT L
		5	1016	56.37	19	24.05	155	17.86	8.26	2.1	2.5	1.3	19	3	47	.15	2	0.7	0.9	16	INT L	
		5	12	3	26.41	19	24.76	155	37.13	1.05	2.3	2.6	1.7	16	2	161	.14	5	0.6	1.3	16	MLO
		5	13	2	11.50	19	49.27	155	42.02	21.26	1.8	1.9	1.6	17	3	179	.11	6	1.0	2.2	16	KEA
		5	1350	41.91	19	18.54	155	13.38	7.84	1.5	1.7	1.5	21	3	81	.08	3	0.5	1.0	20	SF2	
		5	1754	11.43	19	24.89	155	1.03	7.43	2.1	1.9	1.6	48	6	117	.11	4	0.4	0.4	22	SF5	
		5	2147	22.46	19	22.52	155	30.03	9.89	1.7	1.9	2.0	48	6	35	.12	4	0.3	0.4	43	KAO	
		5	2159	17.15	19	19.71	155	11.69	7.67	1.8	1.8	1.7	49	7	89	.13	5	0.3	0.4	45	SF3	
1990	SEP	6	746	21.06	19	18.04	155	13.66	8.21	2.2	2.6	2.1	50	7	92	.13	2	0.3	0.3	47	SF2	
		6	916	37.37	19	19.24	155	8.51	6.33	1.4	1.3	24	6	82	.09	4	0.4	0.7	22	SF4		
		6	943	24.30	19	19.24	155	11.84	6.55	1.1	1.2	24	3	98	.10	5	0.4	1.0	22	SF3		
		6	1115	10.35	19	19.17	155	13.22	9.21	2.2	2.7	2.2	48	6	126	.12	6	0.4	0.6	43	SF2	
		6	1116	50.86	19	18.18	155	13.20	9.10	1.3	1.3	20	4	94	.08	2	0.5	1.0	16	SF2		
		6	1537	28.16	19	10.99	155	20.01	46.80		1.5	27	2	199	.10	9	1.4	1.2	5	DEP		
		6	17	0	42.01	19	13.64	155	34.97	8.40	2.4	2.2	2.1	33	1	193	.19	4	0.7	0.9	19	LSW
		6	2239	53.52	19	50.37	156	37.79	2.05	2.8	2.6	2.6	44	3	102	.17	84	6.3	2.8	44	D15	
		6	2341	30.84	19	22.32	155	2.93	8.08	1.8	1.2	1.5	42	3	114	.14	4	0.6	0.5	40	SF5	
		7	0	38.50	19	23.48	155	18.70	9.64	2.2	2.3	1.5	21	5	54	.11	2	0.6	0.9	18	INT L	

## 1989 HVO EARTHQUAKE SUMMARY LIST

ORIGIN TIME		LAT N		ION W		DEPTH AMP		DUR		CD		GAP RMS		MIN ERH		ERZ NO								
YEAR	MON	DA	HRMN	SEC	DEG	MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	KM	FM	RMK						
1989	AUG	30	1921	8.98	19	22.22	155	13.87	7.99	1.9	1.5	1.2	11	2	247	10	4	1.2	1.8	2	SF2	L		
		30	20	6	11.08	19	25.61	155	16.25	9.21	2.1	1.9	1.4	14	1	127	08	2	0.8	1.5	1	INT	L	
		30	20	56	55.07	19	23.78	155	19.76	19.49	2.2	2.2	1.1	5	0	301	13	5	6.6	14.6	2	DML	L	
		30	23	18	41.03	19	23.22	155	17.71	6.40	1.9	2.4	1.4	17	2	45	09	2	0.5	0.7	17	INT	L	
		31	222	56	83	19	25.29	155	15.82	9.00	2.2	1.5	1.8	2	131	11	2	0.8	1.1	16	INT	L		
		31	224	0	82	19	24.73	155	17.12	10.50	1.9	2.1	1.3	21	4	57	13	0	0.8	0.7	17	INT	L	
		31	4	45	39	19	24.67	155	17.79	8.01	2.2	2.5	1.5	21	3	57	12	1	0.6	0.6	18	INT	L	
		31	5	57	28	19	24.70	155	17.04	10.73	2.1	2.3	1.4	19	3	79	08	0	0.7	0.7	16	INT	L	
		31	746	31	90	19	24.15	155	17.87	8.31	2.1	2.5	1.5	19	3	48	15	2	0.6	1.0	17	INT	L	
		31	857	37	76	19	19.78	155	7.89	8.71	1.6	1.6	1.4	32	6	94	10	5	0.4	0.4	27	SF4	L	
1989	SEP	31	944	25	01	19	24.94	155	17.45	10.81	2.4	1.6	1.3	3	133	08	1	1.1	0.6	11	INT	L		
		31	1034	9	28	19	25.69	155	17.46	10.59	1.9	1.7	1.2	15	4	98	11	1	1.8	1.0	9	INT	L	
		31	1142	45	08	19	22.98	155	19.22	10.11	2.3	2.5	1.6	16	5	109	21	4	1.5	1.5	12	KAO	L	
		31	1222	40	58	19	25.18	155	18.09	9.87	1.8	1.9	1.2	14	5	90	11	1	2.1	0.7	7	INT	L	
		31	1433	2	87	19	26.27	155	17.37	14.53	2.1	2.1	1.2	14	3	186	13	2	2.2	1.1	12	DEP	L	
		31	1635	59	08	19	27.10	155	12.43	10.58	2.4	3.1	1.7	12	1	268	09	6	1.6	1.4	0	GIN	L	
		31	1710	56	39	19	19.30	155	29.77	10.30	1.7	1.6	1.5	31	2	53	10	7	0.3	0.6	11	KAO	L	
		31	1753	21	12	19	24.63	155	17.80	9.52	1.4	2.8	1.6	5	0	133	06	1	0.9	0	SNC	L		
		31	1944	58	61	19	25.74	155	16.26	10.34	2.1	2.7	1.6	12	1	131	10	2	0.9	1.5	0	INT	L	
		31	2215	33	17	19	24.15	155	17.87	2.02	1.6	2.0	1.3	11	0	83	17	2	0.5	0.6	1	SSC	L	
1989	SEP	1	052	41	31	19	23.46	155	19.04	8.40	2.2	2.6	1.5	11	0	116	12	1	1.0	2.3	0	KAO	L	
		1	739	31	13	19	19.35	155	8.74	8.69	2.0	1.7	2.0	42	7	74	11	4	0.4	0.6	31	SF4	L	
		1	923	5	75	19	24.94	155	16.50	9.78	2.2	1.7	1.6	10	0	153	12	1	2.2	2.3	3	INT	L	
		1	1343	24	93	19	24.41	155	16.38	4.51	1.7	1.5	1.1	11	1	86	11	1	0.5	0.8	0	SEC	L	
		1	1616	35	71	19	19.35	155	8.14	5.41	1.2	1.1	1.6	28	8	91	12	4	0.3	0.9	25	SF4	L	
		1	1757	25	28	19	26.30	155	16.72	11.41	1.9	1.6	1.3	13	5	124	06	2	1.4	0.6	9	INT	L	
		1	2230	6	76	19	27.23	155	15.67	11.98	2.3	2.2	1.6	19	10	212	12	2	1.3	0.8	10	INT	L	
		1	2344	54	64	19	19.59	155	8.43	6.45	2.2	2.1	2.3	43	7	82	14	4	0.7	0.7	39	SF4	L	
		2	117	25	93	19	26.99	155	15.11	9.18	1.9	1.6	1.2	19	9	217	14	3	1.0	1.0	10	INT	L	
		2	532	47	88	19	24.69	154	59.13	6.35	1.1	1.3	1.6	29	6	165	19	1	0.6	0.8	25	IER	L	
1989	SEP	2	1024	13	75	19	25.75	154	59.38	5.92	1.1	1.7	33	9	76	20	2	0.5	0.8	24	LER	L		
		2	1558	7	86	19	25.45	155	19.41	6.72	2.0	1.3	1.3	31	11	76	12	3	0.4	0.7	20	KAO	L	
		2	1742	13	66	19	19.65	155	8.04	7.94	2.1	1.8	1.9	42	10	90	13	4	0.4	0.5	33	SF4	L	
		2	1941	42	73	19	5.45	155	0.04	40.29	2.8	2.5	2.6	47	2	269	11	26	2.1	1.0	46	LOI	L	
		2	22	0	86	19	19.43	155	6.62	7.31	1.9	1.2	1.9	35	10	130	11	5	0.4	0.6	30	SF4	L	
		3	454	55	86	19	15.56	155	28.42	8.42	1.3	1.5	25	1	69	14	3	0.4	1.0	13	LSW	L		
		3	532	32	11	19	18.90	155	18.61	32.74	1.8	1.9	1.8	55	9	70	11	2	0.6	0.8	41	DEP	L	
		3	1552	41	64	19	24.71	155	0.02	7.99	1.1	1.6	1.6	21	2	139	10	2	0.5	0.8	6	SF5	L	
		3	1751	3	98	19	5.71	155	32.24	47.95	2.6	2.7	2.3	40	3	164	15	10	0.9	1.3	31	DLS	L	
		3	2057	55	38	19	26.02	155	13.19	9.60	1.8	1.2	1.4	16	6	276	13	3	1.4	0.7	11	GIN	L	
1989	SEP	4	755	42	89	19	17.56	155	20.70	8.26	1.2	1.1	17	4	131	10	4	0.5	0.8	13	SWR	L		
		4	12	3	15	57	19	20.75	155	5.42	5.45	1.6	1.7	1.7	45	6	107	12	5	0.4	0.7	39	SF4	L
		4	1226	1	44	19	22.41	155	33.71	6.85	2.3	2.4	1.8	33	4	46	14	5	0.4	0.9	30	MLO	L	
		4	1517	11	10	19	20.57	155	7.01	7.94	0.8	1.2	1.4	32	6	97	13	5	0.4	0.6	27	SF4	L	
		4	1730	30	06	19	19.47	155	10.32	6.52	1.3	29	3	98	13	5	0.4	0.9	27	SF4	L			
		4	1730	30	06	19	19.47	155	10.32	6.52	1.3	29	3	98	13	5	0.4	0.9	27	SF4	L			
		4	1730	30	06	19	19.47	155	10.32	6.52	1.3	29	3	98	13	5	0.4	0.9	27	SF4	L			
		4	1730	30	06	19	19.47	155	10.32	6.52	1.3	29	3	98	13	5	0.4	0.9	27	SF4	L			
		4	1730	30	06	19	19.47	155	10.32	6.52	1.3	29	3	98	13	5	0.4	0.9	27	SF4	L			
		4	1730	30	06	19	19.47	155	10.32	6.52	1.3	29	3	98	13	5	0.4	0.9	27	SF4	L			



## 1989 HVO EARTHQUAKE SUMMARY LIST

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ORIGIN TIME		LAT N	ION W	DEPTH	AMP	DUR	CD	GAP	RMS	MIN	ERH	ERZ	NO										
YEAR	MON	DA	HRMN	SEC	DEG MIN	DEG MIN	KM	MAG	MAG NR	NS	DEG	SEC	DIS	KM	RM	FM	RMK						
1989	SEP	8	1550	37.76	19	23.12	155	19.20	7.50	1.9	2.2	1.4	17	4	59	1.0	4	0.5	1.2	16	KAO	L	
		8	1844	3.32	19	24.29	155	16.30	10.16	2.5	2.4	1.7	21	3	83	1.2	1	0.7	0.6	18	INT	L	
		8	1845	12.09	19	24.02	155	18.07	6.12	2.3	2.1	1.6	16	2	51	1.0	2	0.5	0.8	18	INT	L	
		8	1914	52.48	19	19.49	155	11.64	6.06	1.3	1.4	36	3	94	1.0	6	0.4	0.6	35	SF3			
		8	1943	27.66	19	14.37	155	26.65	7.95	1.6	1.5	36	3	130	1.6	5	0.5	0.7	34	LSW			
		8	1948	28.63	18	28.75	155	44.87	35.78	2.7	2.2	43	9	313	1.2	57	1.1	2.4	39	DIS			
		8	20	6	46.86	19	24.89	155	16.37	6.53	1.7	1.4	1.1	21	4	101	1.2	1	0.7	0.4	17	INT	L
		8	2032	6.51	19	24.53	155	16.87	8.78	1.9	1.4	1.1	20	4	83	1.4	1	0.9	0.6	17	INT	L	
		8	2130	52.01	19	24.70	155	17.33	10.48	1.7	1.9	1.1	20	4	46	1.09	1	0.7	0.6	17	INT	L	
		8	2249	36.15	19	24.88	155	16.52	5.57	1.9	1.8	1.3	18	2	97	1.2	1	0.6	0.5	17	INT	L	
8	2347	7.63	19	24.26	155	17.38	3.76	1.4	1.9	1.0	19	4	52	1.15	1	0.5	0.4	17	SSC	L			
		9	127	47.61	19	24.82	155	16.89	6.26	2.3	2.1	1.6	23	5	76	1.16	1	0.6	0.6	18	INT	L	
		9	233	32.98	19	24.75	155	15.99	8.50	1.8	1.4	1.0	20	6	145	1.12	2	1.0	0.5	15	INT	L	
		9	4	2	4.58	18	48.14	155	24.79	37.13	1.5	2.2	2.1	55	9	267	1.12	32	0.9	1.2	47	LOI	
		9	446	54.48	19	25.13	155	15.72	3.72	1.6	1.5	1.2	20	4	126	1.12	2	0.5	0.4	16	SNC	L	
		9	6	40.11	19	26.69	155	14.19	5.93	2.3	2.5	1.7	23	5	203	1.16	4	0.7	1.3	18	INT	L	
		9	955	59.00	19	24.82	155	16.89	11.06	2.1	1.7	1.3	20	3	90	1.13	0	0.8	0.7	18	INT	L	
		9	1316	26.73	19	25.27	155	15.43	7.31	2.3	2.0	1.6	22	4	144	1.12	2	0.8	0.6	18	INT	L	
		9	1317	8.11	19	24.66	155	16.45	9.51	2.2	2.3	1.7	21	4	92	1.11	1	0.7	0.5	17	INT	L	
		9	1415	9.44	19	22.83	155	22.39	8.53	1.7	1.8	2.0	40	4	133	1.13	4	0.6	0.4	39	SF5		
9	1522	44.46	19	19.95	155	9.68	8.15	1.8	1.4	1.6	38	6	84	1.10	4	0.4	0.5	34	SF3				
		9	1738	8.38	19	25.34	155	16.34	12.97	2.5	2.5	1.7	23	4	116	1.14	1	1.0	0.5	19	INT	L	
		9	19	4	23.75	19	20.77	155	11.90	8.04	1.9	2.0	1.8	53	8	70	1.12	4	0.4	0.3	47	SF3	
		9	2150	45.55	19	24.28	155	17.46	8.28	1.6	1.7	1.0	37	3	71	1.13	2	0.8	0.9	15	INT	L	
		9	2158	9.22	19	25.95	155	30.22	8.62	2.2	2.0	1.9	44	5	38	1.11	8	0.4	1.0	39	KAO		
		9	2259	23.60	19	28.50	155	20.73	1.63	1.4	1.1	1.2	18	2	133	1.13	2	0.6	0.4	17	KAO		
		9	23	2	58.01	19	23.78	155	18.87	12.12	2.4	2.3	1.5	22	3	53	1.17	1	0.8	1.2	19	INT	L
		10	47	37.13	19	14.35	155	26.15	6.92	1.7	1.5	1.6	37	2	109	1.12	4	0.4	0.9	38	LSW		
		10	2	9	0.06	19	23.46	155	16.61	10.13	1.9	2.0	1.3	19	5	87	1.13	1	0.9	0.6	17	INT	L
		10	329	56.96	19	19.77	155	10.53	5.77	1.1	1.3	39	6	92	1.16	4	0.4	0.9	33	SF3			
10	443	5.89	19	25.87	155	15.67	10.46	1.9	1.9	1.2	19	3	194	1.11	3	1.2	0.5	16	INT	L			
		10	557	47.37	19	18.35	155	0.80	36.12	3.3	3.4	3.2	60	9	199	1.12	5	0.9	0.5	51	DEP	F	
		10	6	5	22.82	19	24.76	155	16.43	8.16	2.4	2.4	1.8	19	2	96	1.12	1	0.6	0.9	18	INT	L
		10	826	16.95	19	15.38	155	25.22	8.79	1.6	1.2	1.6	2	72	1.06	3	0.5	0.9	5	LSW			
		10	1420	31.38	19	19.80	155	7.50	7.82	2.1	2.5	29	2	133	1.10	5	0.5	0.8	23	SF4			
		10	1734	50.03	19	20.51	155	12.68	7.74	1.8	2.2	1.8	41	4	68	1.12	4	0.4	0.5	34	SF2		
		10	1736	54.85	19	23.93	155	19.05	8.27	2.0	2.2	1.4	8	0	181	1.14	4	2.2	3.0	0	KAO	L	
		10	1835	11.56	19	23.76	155	15.52	15.59	2.0	2.4	1.2	14	4	100	1.12	2	2.0	0.8	0	DEP	L	
		10	19	7	42.09	19	24.41	155	18.89	5.67	2.0	2.7	1.3	13	2	162	1.17	3	0.9	1.4	0	INT	L
		10	1918	23.32	19	15.54	155	20.79	10.39	2.0	2.0	1.8	1.1	6	0	304	1.09	15	8.3	7.4	0	SWR	L*
10	1927	46.19	19	24.08	155	15.87	2.11	1.3	1.3	1.4	11	3	118	1.06	1	0.3	0.6	7	SEC				
		10	1941	55.52	19	21.46	155	14.14	4.05	1.8	2.0	1.1	8	1	166	1.09	4	1.0	1.5	0	KOA	L	
		10	1948	5.96	19	26.34	155	13.61	11.62	2.1	1.4	7	1	203	1.10	6	1.8	2.0	1	GLN	L		
		10	2131	1.55	19	25.57	155	15.46	6.60	2.2	2.9	1.6	18	2	150	1.13	3	0.8	0.7	17	INT	L	
		10	2347	26.63	19	19.90	155	8.77	7.57	1.9	2.4	1.9	53	8	75	1.13	4	0.3	0.4	47	SF4		
		10	2417	26.63	19	19.90	155	8.77	7.57	1.9	2.4	1.9	53	8	75	1.13	4	0.3	0.4	47	SF4		
		10	2417	26.63	19	19.90	155	8.77	7.57	1.9	2.4	1.9	53	8	75	1.13	4	0.3	0.4	47	SF4		
		10	2417	26.63	19	19.90	155	8.77	7.57	1.9	2.4	1.9	53	8	75	1.13	4	0.3	0.4	47	SF4		
		10	2417	26.63	19	19.90	155	8.77	7.57	1.9	2.4	1.9	53	8	75	1.13	4	0.3	0.4	47	SF4		
		10	2417	26.63	19	19.90	155	8.77	7.57	1.9	2.4	1.9	53	8	75	1.13	4	0.3	0.4	47	SF4		

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## 1989 HVO EARTHQUAKE SUMMARY LIST

ORIGIN TIME		LAT N		LON W		DEPTH		AMP		DUR		CD		GAP		RMS		MIN		ERH		ERZ		NO	
YEAR	MON	DA	HRMN	SEC	DEG	MIN	DEG	MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	FM	RMK	KM	FM	RMK	KM	FM	RMK
1989	SEP	10	22	2	13.86	19	24.47	155	16.82	7.79	1.8	2.4	1.3	19	2	82	1.13	1	0.6	0.8	18	INT	L		
		10	2240	15.55	19	24.10	155	15.95	7.46	1.6	2.1	1.0	15	3	128	1.10	1	0.8	0.4	12	INT	L			
		10	2253	30.67	19	24.08	155	15.40	4.85	1.6	2.1	1.2	18	3	77	1.12	2	0.5	0.8	18	SEC	L			
		10	2349	52.43	19	23.85	155	17.97	9.93	1.6	1.9	1.1	16	2	64	1.14	2	0.8	1.1	16	INT	L			
		11	0	1	9.76	19	24.50	155	17.51	7.93	1.7	2.2	1.2	22	5	54	1.15	1	0.7	0.5	18	INT	L		
		11	112	20.65	19	23.24	155	18.80	7.86	1.8	2.2	1.1	19	2	57	1.19	2	0.7	1.5	18	INT	L			
		11	128	54.34	19	24.18	155	18.23	8.95	1.5	1.7	1.0	17	4	82	1.14	3	0.7	0.8	15	INT	L			
		11	132	35.92	19	51.92	155	34.48	29.05	2.2	1.7	1.7	47	4	162	1.11	9	0.7	0.8	45	KEA				
		11	143	55.43	19	20.96	155	52.34	10.14	2.2	1.7	1.8	38	4	186	1.21	9	1.0	0.6	36	KON				
		11	248	25.29	19	25.04	155	16.09	9.47	1.8	2.0	1.2	22	4	113	1.14	2	0.8	0.5	18	INT	L			
		11	329	25.11	19	25.17	155	16.47	8.32	2.1	2.2	1.0	18	2	107	1.14	1	0.8	0.6	16	INT	L			
		11	447	11.99	19	24.26	155	16.84	8.66	1.7	1.7	1.2	19	5	77	1.10	1	0.7	0.5	16	INT	L			
		11	529	9.36	19	25.36	155	16.57	7.70	2.1	2.9	1.5	19	2	109	1.12	1	0.7	0.6	17	INT	L			
11	544	58.92	19	25.15	155	16.32	7.65	1.8	2.0	1.3	18	2	111	1.10	1	0.6	0.5	17	INT	L					
11	626	25.52	19	23.97	155	17.69	9.92	2.1	2.6	1.4	22	4	46	1.13	2	0.6	0.8	18	INT	L					
11	646	44.15	19	24.11	155	17.14	11.59	1.8	1.8	1.2	17	0	68	1.12	1	0.8	2.0	18	INT	L					
11	739	41.58	19	24.93	155	16.89	8.19	1.6	1.5	1.1	19	4	92	1.12	0	0.7	0.5	16	INT	L					
11	811	59.74	19	24.45	155	16.82	7.13	1.7	2.2	1.1	14	1	82	1.11	2	0.6	0.8	15	INT	L					
11	839	6.95	19	25.05	155	16.38	6.79	1.9	1.3	1.8	2	106	1.11	1	0.7	0.5	18	INT	L						
11	9	25.34	19	24.00	155	16.48	6.28	1.7	1.5	1.1	18	3	73	1.15	0	0.6	0.8	17	INT	L					
11	931	48.04	19	24.69	155	15.85	2.55	1.3	1.8	1.0	13	0	142	1.12	2	0.6	0.5	14	SNC	L					
11	948	26.90	19	24.62	155	16.55	6.63	1.7	1.5	1.0	21	4	90	1.12	1	0.6	0.5	17	INT	L					
11	1034	31.28	19	26.47	155	15.64	9.55	2.0	2.5	1.4	2	164	1.12	3	1.1	1.0	3	INT	L						
11	1124	12.66	19	27.22	155	16.71	5.83	1.8	2.5	1.2	14	4	136	1.11	1	1.0	1	INT	L						
11	1215	56.20	19	24.23	155	17.01	7.39	2.1	1.1	1.1	1	1	92	1.06	1	0.7	0.8	1	INT	L					
11	1339	51.51	19	24.72	155	17.32	8.66	1.8	1.9	1.3	14	2	65	1.14	1	0.8	1.3	2	INT	L					
11	1530	16.05	19	24.52	155	18.28	9.88	2.1	2.9	1.3	18	6	85	1.09	2	1.2	0.7	2	INT	L					
11	1637	28.72	19	25.30	155	20.30	10.03	2.0	2.0	1.8	45	6	29	1.12	4	0.3	0.6	29	KAO						
11	17	3	13.10	19	26.74	155	15.43	0.02	1.8	2.1	1.5	13	2	218	1.17	4	0.7	0.6	0	SNC	L				
11	1742	33.07	19	23.73	155	17.79	2.98	1.3	1.6	1.0	8	3	96	1.10	3	0.4	0.8	0	SSC	L					
11	1817	6.77	19	19.93	155	9.78	7.27	1.5	1.5	1.6	28	2	85	1.11	4	0.5	0.9	22	SF3	L					
11	2014	46.31	19	18.10	155	58.02	12.41	2.3	1.8	1.7	21	1	266	1.11	11	1.8	0.5	9	KON						
11	21	4	19.75	19	25.55	155	26.64	4.35	2.0	1.2	1.3	47	13	42	1.14	5	0.3	1.2	36	KAO					
11	2148	9.82	19	24.62	155	17.18	7.03	1.7	1.8	1.1	20	3	63	1.12	1	0.6	0.6	18	INT	L					
11	2243	37.49	19	24.15	155	16.63	6.34	1.5	1.5	0.9	19	3	76	1.14	0	0.6	0.7	16	INT	L					
12	233	51.35	19	24.62	155	16.74	6.78	2.0	2.6	1.5	18	2	87	1.12	1	0.7	0.6	17	INT	L					
12	349	35.24	19	23.02	155	27.81	5.50	1.1	0.9	2.1	3	45	1.13	1	0.4	0.5	18	KAO							
12	521	5.34	19	27.10	156	9.27	2.86	2.7	1.9	1.9	35	7	284	1.13	25	0.9	1.2	30	KON						
12	550	7.89	19	23.90	155	16.25	4.76	1.5	1.7	0.9	15	2	71	1.15	1	0.6	0.9	14	SEC	L					
12	633	1.39	19	23.13	155	16.84	6.59	1.5	1.7	0.9	17	3	97	1.16	1	0.8	0.5	14	INT	L					
12	734	46.97	19	24.49	155	17.59	8.67	1.6	1.7	1.0	19	3	43	1.15	1	0.7	0.8	17	INT	L					
12	937	30.46	19	16.51	155	13.23	8.63	1.6	1.2	1.4	26	6	206	1.13	1	0.6	0.7	22	SF2						
12	1434	15.12	19	24.02	155	17.26	6.93	2.0	2.2	1.4	16	4	61	1.19	1	1.1	1.1	13	INT	L					
12	2334	11.50	19	21.74	155	24.74	13.22	2.0	1.8	1.6	49	10	44	1.11	4	0.4	0.3	40	DEP						
13	230	0.48	19	22.53	155	8.38	3.23	1.1	1.2	2.3	3	105	1.11	2	0.6	0.3	0.2	22	SER						

## 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	LON W	DEPTH AMP				CD	GAP				RMS	MIN	ERH	ERZ NO			
			HRMN	SEC			RM	MAG	DUR	NR		NS	DEG	SEC	DIS					RM		
																					DEG	MIN
1989	SEP	16	1039	44.58	19	24.29	155	17.32	9.44	2.4	1.6	18	7	91	13	1	0.9	0.8	13	INT L		
		16	1046	26.19	19	25.32	155	17.05	11.87	1.8	1.8	1.2	17	6	96	13	1	1.4	1.0	10	INT L	
		16	1049	15.38	19	27.04	155	28.42	8.36	1.6	1.2	1.1	21	5	74	10	7	0.4	1.2	16	KAO	
		16	1114	17.05	19	24.22	155	17.43	9.78	1.7	1.7	0.17	6	118	16	1	1.1	1.2	9	INT L		
		16	1131	1.78	19	22.33	155	2.41	8.03	1.7	2.0	1.6	33	6	141	14	5	0.5	0.6	29	SF5 L	
		16	12	7	54.68	19	24.48	155	17.81	10.62	1.7	1.9	1.0	13	3	88	09	2	1.8	1.2	7	INT L
		16	1454	53.06	19	23.64	155	19.01	14.50	1.9	1.8	1.2	13	4	182	09	4	1.6	0.8	8	DEP L	
		16	1736	40.48	19	25.55	155	18.01	10.74	1.7	1.1	1.15	4	241	15	1	0.6	1.7	7	INT L		
		16	1748	57.47	19	25.45	155	6.76	0.03	2.1	1.3	1.0	0	126	08	4	0.7	2.0	10	SME *		
		16	1752	56.08	19	23.37	155	5.78	0.03	2.1	1.3	1.0	3	147	16	3	0.7	1.4	9	SME *		
		16	1912	33.62	19	23.72	155	16.90	5.46	2.0	2.8	1.4	12	2	99	12	1	0.7	1.1	12	INT L	
		16	2134	3.20	19	17.98	155	13.26	6.43	1.9	1.8	1.7	33	5	95	12	2	0.5	0.8	28	SF2	
		16	2237	13.49	19	23.26	155	15.20	3.93	1.6	1.8	1.1	5	0	168	09	3	1.0	2.6	0	SEC L	
		16	2330	57.89	19	26.08	155	24.00	8.93	1.8	1.6	1.5	35	8	53	09	3	0.3	0.6	18	KAO	
		17	523	27.50	19	30.26	155	13.59	6.39	2.2	2.5	1.5	10	0	268	25	7	6.7	4.6	0	GLN L	
		17	612	4.57	19	15.46	155	29.80	12.87	2.4	2.4	2.0	43	7	61	13	1	0.4	0.7	27	LSW	
		17	735	25.68	19	24.57	155	17.41	2.15	1.7	1.8	1.3	15	1	65	13	1	0.4	0.2	6	SNC L	
		17	1159	53.60	19	21.64	155	17.17	2.69	1.6	1.8	1.3	7	0	144	12	3	2.2	2.8	0	SWR L	
		17	14	9	6.75	19	17.35	155	27.50	10.54	1.6	1.3	20	2	51	10	6	0.5	1.0	12	LSW	
		17	18	7	34.33	19	21.18	155	5.12	10.54	0.8	1.4	1.3	9	1	104	10	5	1.0	1.7	7	SF5
		17	1836	19.99	19	24.36	155	18.25	16.90	2.2	2.5	1.2	10	0	112	06	2	2.6	4.7	0	DEP L	
		17	1931	48.25	19	22.85	155	3.84	8.67	2.3	2.8	2.6	48	7	94	12	3	0.4	0.4	30	SF5	
		17	2045	32.05	19	22.67	155	3.31	8.42	0.8	1.4	1.22	1	175	13	3	0.6	0.7	12	SF5		
		18	113	11.42	19	27.73	154	53.63	4.60	1.6	1.9	1.7	43	6	132	13	3	0.4	0.6	39	SLE	
		18	4	37.00	19	24.42	155	16.39	6.49	1.7	1.7	1.3	19	2	86	14	1	0.6	0.7	18	INT L	
		18	4	30.59	19	24.63	155	16.59	6.05	1.6	1.8	1.2	18	2	89	13	1	0.6	0.5	17	INT L	
		18	435	6.82	19	24.42	155	18.61	7.48	2.0	2.5	1.4	17	2	75	12	2	0.6	0.8	18	INT L	
		18	759	35.51	19	29.53	155	26.77	1.76	1.5	1.1	1.19	5	104	09	5	0.4	0.8	15	KAO		
		18	1119	9.59	19	19.75	155	7.51	5.70	1.4	1.4	29	4	103	10	5	0.4	1.1	25	SF4		
		18	1529	38.74	19	30.74	155	27.49	4.71	2.0	2.0	1.3	22	4	110	12	2	0.4	1.2	12	MLO	
		19	444	14.06	19	25.24	155	16.05	7.51	1.9	2.6	1.3	20	2	122	11	2	0.7	0.5	18	INT L	
		19	2121	5.11	19	26.46	155	21.94	10.15	2.3	2.4	1.8	50	12	64	13	3	0.3	0.4	41	KAO	
		19	2226	57.60	19	20.53	155	6.62	7.08	2.0	2.1	1.9	49	4	102	13	5	0.4	0.5	46	SF4	
		19	2316	35.58	19	19.78	155	7.65	7.53	1.2	1.3	28	5	99	10	5	0.4	0.6	27	SF4		
		20	0	39.52	19	18.36	156	50.93	27.98	2.6	2.4	2.5	2	331	14	20	2.3	5.0	25	DIS		
		20	2	36.00	19	21.45	155	4.77	5.20	1.4	1.5	1.6	40	6	86	14	4	0.4	0.9	34	SF5	
		20	410	27.52	19	24.25	155	18.13	7.42	1.8	2.1	1.2	16	2	56	16	2	0.7	1.1	16	INT L	
		20	543	34.85	19	55.86	156	8.69	82.88	2.9	1.9	1.9	3	300	14	42	2.7	1.3	19	KOH		
		20	832	19.50	19	28.51	155	24.78	4.08	2.1	1.8	1.5	36	6	74	13	4	0.3	0.8	32	KAO	
		20	1245	1.40	19	18.92	155	9.92	6.76	1.7	1.7	1.7	37	7	111	14	5	0.5	0.8	30	SF3	
		21	012	11.08	19	19.46	155	8.82	7.57	1.4	1.4	41	7	83	09	4	0.4	0.5	35	SF4		
		21	148	8.77	19	22.84	155	26.25	11.34	2.1	1.9	1.7	53	7	33	13	2	0.3	0.4	46	KAO	
		21	536	42.29	19	22.57	155	26.46	12.28	1.6	1.2	1.3	41	4	41	11	2	0.4	0.3	37	KAO	
		21	720	4.85	19	22.14	155	26.60	10.54	2.0	2.0	1.7	50	8	41	12	2	0.1	0.4	43	KAO	
		21	9	42.46	19	25.47	155	17.51	11.51	1.8	1.8	1.2	14	2	86	08	0	1.0	1.1	11	INT L	
		21	10	42.46	19	25.47	155	17.51	11.51	1.8	1.8	1.2	14	2	86	08	0	1.0	1.1	11	INT L	
		21	10	42.46	19	25.47	155	17.51	11.51	1.8	1.8	1.2	14	2	86	08	0	1.0	1.1	11	INT L	
		21	10	42.46	19	25.47	155	17.51	11.51	1.8	1.8	1.2	14	2	86	08	0	1.0	1.1	11	INT L	
		21	10	42.46	19	25.47	155	17.51	11.51	1.8	1.8	1.2	14	2	86	08	0	1.0	1.1	11	INT L	
		21	10	42.46	19	25.47	155	17.51	11.51	1.8	1.8	1.2	14	2	86	08	0	1.0	1.1	11	INT L	

## 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	LON W	DEPTH AMP		DUR	CD	NS	DEG	RMS	MIN	ENH	ERZ NO						
			HRMN	SEC			RM	MAG									MAG	NR	DIS	RM	FM	RMK
1989	SEP	13	838	26.76	19	18.39	155	28.81	11.13	1.7	1.6	1.4	24	2	70	.11	7	0.5	1.3	22	LSW	
		13	1114	1.62	19	20.35	155	7.53	8.15	2.4	2.9	2.6	50	8	93	.12	5	0.5	0.6	42	SF4	
		13	1745	52.37	19	22.46	155	3.19	4.73	0.8	1.5	1.5	25	0	117	.11	4	0.5	1.6	7	SSF	
		13	2018	32.76	19	18.47	155	13.32	9.83	3.1	3.4	3.3	52	6	131	.11	8	0.5	0.4	48	SF2	
		13	2021	17.96	19	17.82	155	12.91	7.29	1.8	2.1	1.7	25	2	119	.09	2	0.6	1.0	18	SF2	
		13	2212	15.26	19	25.51	155	14.67	5.43	2.0	2.6	1.5	20	2	166	.17	2	0.9	1.1	18	INT L	
		13	2225	20.79	19	24.83	155	13.25	6.61	1.5	1.8	1.1	20	4	60	.14	0	0.6	0.6	17	INT L	
		14	130	8.31	19	17.67	155	13.25	6.97	1.2	1.1	23	3	106	.10	1	0.4	0.7	21	SF2		
		14	326	7.53	19	21.32	155	7.97	8.84	1.6	1.9	1.5	41	5	73	.12	4	0.5	0.4	37	SF4	
		14	344	40.30	19	17.61	155	13.19	7.62	1.5	1.5	1.2	31	6	113	.11	1	0.5	0.6	26	SF2	
1989	SEP	14	413	46.21	19	17.35	155	12.80	7.36	1.4	1.2	24	4	153	.11	1	0.5	0.6	22	SF2		
		14	6	0	32.91	19	20.01	155	7.01	6.88	0.9	1.2	1.3	31	4	108	.12	5	0.4	0.6	30	SF4
		14	6	2	10.51	19	56.08	155	53.31	25.48	2.8	3.4	2.4	37	8	209	.11	24	0.9	1.1	31	KOH
		14	611	1.32	19	17.58	155	12.99	7.35	1.2	1.7	1.2	37	2	127	.08	1	0.7	0.8	15	SF2	
		14	951	6.50	19	55.11	155	55.78	24.64	2.6	3.5	2.5	28	8	215	.12	27	1.1	1.7	23	KOH	
		14	1351	37.12	19	17.05	155	12.96	8.04	1.2	1.3	17	2	181	.11	1	0.6	1.2	8	SF2		
		14	1442	56.87	19	22.76	155	19.89	7.31	1.8	1.7	1.2	7	1	202	.09	5	1.5	4.4	2	KAO L	
		14	1554	50.93	20	6.75	155	39.32	18.62	2.5	2.4	2.0	40	5	209	.13	13	1.3	2.6	24	KOH	
		14	20	5	16.20	19	24.22	155	19.42	7.78	1.9	2.1	1.3	12	4	223	.10	4	1.1	1.2	6	KAO L
		14	2335	22.76	19	24.97	155	16.68	12.78	1.9	1.6	1.2	15	3	97	.05	1	1.0	0.5	12	INT L	
1989	SEP	14	2347	32.21	19	23.93	155	17.80	10.88	2.5	1.6	1.7	2	74	.14	2	0.7	1.1	0	INT L		
		15	0	4	42.35	19	25.42	155	16.73	9.97	2.1	2.5	1.7	13	0	107	.09	1	0.9	1.8	1	INT L
		15	1	6	33.85	19	27.57	155	15.79	10.28	2.1	2.8	1.0	11	2	227	.13	2	1.6	1.3	0	INT L
		15	315	42.84	19	28.55	155	8.55	5.64	2.0	1.5	1.3	8	2	326	.14	12	2.3	12.4	0	GLN L*	
		15	4	7	50.89	19	16.83	155	27.43	10.64	1.1	1.1	15	3	109	.09	6	0.6	0.8	9	LSW	
		15	436	43.03	19	24.58	155	16.91	7.60	2.1	2.5	1.6	11	0	62	.15	1	0.7	1.6	1	INT L	
		15	522	30.29	19	24.12	155	16.40	9.53	1.9	2.1	0.6	8	0	109	.06	1	1.4	2.8	0	INT L	
		15	620	6.52	19	32.16	155	14.31	14.17	2.3	2.3	1.5	8	1	305	.16	14	3.4	4.0	DEP L		
		15	7	4	55.38	19	16.82	154	35.90	28.62	2.3	3.1	1.5	17	0	317	.09	33	10.4	4.8	10	DIS *
		15	819	10.19	19	27.79	155	52.32	0.36	2.1	1.8	1.7	16	3	179	.11	6	0.9	0.3	15	KOH	
1989	SEP	15	854	16.99	19	32.93	155	12.95	4.33	2.1	2.4	1.3	10	1	304	.13	15	3.1	14.2	1	GLN L*	
		15	918	57.05	19	24.28	155	17.44	11.83	2.2	2.6	1.5	17	6	84	.09	1	1.2	0.6	11	INT L	
		15	10	3	22.61	19	26.13	155	16.53	10.70	2.1	2.7	1.5	13	4	130	.11	2	1.6	1.1	2	INT L
		15	13	2	2.45	19	25.25	155	16.91	14.60	2.6	3.1	1.6	14	1	99	.11	1	0.9	1.4	2	DEP L
		15	1541	50.90	19	23.92	155	15.84	10.43	2.1	2.7	1.5	14	3	72	.17	1	1.3	1.2	12	INT L	
		15	1625	47.30	19	25.59	155	16.14	12.74	1.9	2.1	1.2	14	4	182	.11	2	1.3	0.8	10	INT L	
		15	1714	41.24	19	24.37	155	17.97	13.98	2.6	3.0	1.8	17	6	91	.12	2	1.1	0.6	14	DEP L	
		15	2238	38.78	19	22.85	155	2.50	6.85	1.7	1.2	1.5	31	6	131	.11	4	0.5	0.8	24	SF5	
		15	2246	35.55	19	27.20	155	16.49	12.20	2.5	1.8	2.0	39	8	146	.13	1	1.2	0.6	13	INT L	
		15	2348	50.11	19	20.89	155	4.71	7.28	2.0	2.4	2.0	39	4	101	.10	4	0.4	0.8	33	SF5 L	
1989	SEP	16	043	46.51	19	19.83	155	7.16	9.58	3.0	3.6	3.4	58	9	108	.11	5	0.5	0.4	51	SF4	
		16	241	28.77	19	25.82	155	17.43	10.26	1.7	2.1	1.1	15	5	154	.08	1	1.4	0.7	10	INT L	
		16	424	19.01	19	24.55	155	17.90	10.39	2.0	2.6	1.2	10	0	147	.08	2	1.8	3.0	12	INT L	
		16	615	59.23	19	20.58	155	11.78	9.55	2.2	2.3	2.0	26	1	74	.08	4	0.4	1.0	27	SF3	
		16	630	16.79	19	25.93	155	17.26	11.31	1.8	1.8	1.2	14	3	176	.14	1	1.1	1.0	13	INT L	
		16	819	10.19	19	27.79	155	52.32	0.36	2.1	1.8	1.7	16	3	179	.11	6	0.9	0.3	15	KOH	
		16	918	57.05	19	24.28	155	17.44	11.83	2.2	2.6	1.5	17	6	84	.09	1	1.2	0.6	11	INT L	
		16	1039	2.01	19	24.55	155	17.90	10.39	2.0	2.6	1.2	10	0	147	.08	2	1.8	3.0	12	INT L	
		16	1615	59.23	19	20.58	155	11.78	9.55	2.2	2.3	2.0	26	1	74	.08	4	0.4	1.0	27	SF3	
		16	2348	50.11	19	20.89	155	4.71	7.28	2.0	2.4	2.0	39	4	101	.10	4	0.4	0.8	33	SF5 L	

## 1989 HVO EARTHQUAKE SUMMARY LIST

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YEAR	MON	DA	HRMN	SEC	LAT N	DEG MIN	ION W	DEPTH	AMP	DUR	CD	MAG	MAG	NR	NS	DEG	SEC	DIS	RM	ERZ	NO	RM	FM	RMK	
1989	SEP	21	18	4	21.23	19	8.99	154	47.30	34.78	1.7	1.8	9	0	298	.07	34	9.6	4.4	5	DIS	*			
		21	1950	18.66	19	20.52	155	12.90	7.24	1.4	1.3	1.5	31	1	65	.13	4	0.5	0.7	29	SF2				
		21	2041	56.80	19	26.08	154	53.23	8.60	2.1	2.1	2.1	42	4	182	.14	4	0.8	0.5	29	IER				
		22	617	42.67	19	20.06	155	11.87	9.97	3.3	3.7	3.6	53	7	81	.10	5	0.4	0.3	50	SF3	F			
		22	634	59.08	19	19.01	155	14.64	8.34	1.4	1.4	1.3	36	4	93	.12	4	0.4	0.5	32	SF1				
		22	1113	5.16	19	20.44	155	11.71	8.54	1.9	2.1	1.9	38	3	75	.11	4	0.5	0.6	29	SF3				
		22	14	2	49.29	19	21.00	155	29.94	9.98	1.7	1.6	1.6	24	2	46	.12	5	0.5	0.9	19	KEA			
		23	119	31.37	19	41.75	155	26.30	25.02	2.6	2.9	2.1	59	9	61	.11	10	0.4	0.6	51	KEA				
		23	519	57.67	19	24.66	155	15.96	3.15	1.3	1.3	1.1	17	1	101	.13	2	0.5	0.4	18	SNC	L			
		23	913	17.87	19	25.14	155	20.56	6.31	2.1	2.1	1.4	38	7	43	.12	3	0.3	0.6	31	KAO				
		23	1715	18.28	19	24.68	155	16.92	5.27	1.6	1.7	1.2	19	2	85	.11	0	0.5	0.5	18	INT	L			
		23	1813	52.92	19	13.66	155	32.72	6.38	1.2	1.3	1.5	40	5	120	.14	5	0.5	0.7	36	LSW				
		23	20	4	38.05	19	22.81	154	59.20	7.94	1.8	1.4	1.7	45	5	173	.14	4	0.7	0.4	43	IER			
		23	2041	35.83	19	20.94	155	7.52	8.28	0.8	1.2	1.4	37	5	84	.09	4	0.4	0.4	33	SF4				
		23	21	3	56.28	19	21.25	155	52.98	8.42	2.2	1.5	1.9	36	3	175	.17	10	0.6	0.6	34	KON			
		24	555	17.18	19	18.00	155	13.37	7.35	1.4	1.3	33	5	89	.09	2	0.4	0.5	0.5	31	SF2				
		24	1047	42.05	19	18.47	155	11.67	0.77	1.5	1.3	1.2	5	0	277	.02	7	3.6	7.7	4	SSF	*			
		24	1625	22.46	19	19.43	155	10.78	4.99	1.5	1.3	1.3	15	0	100	.07	5	0.5	2.3	12	SSF				
		24	17	2	35.83	19	18.54	155	14.02	7.06	1.4	1.5	1.3	22	1	100	.08	3	0.4	1.0	14	SF2			
		24	1732	40.55	19	21.09	155	5.08	6.15	0.8	1.4	1.4	22	1	96	.13	4	0.5	1.0	0	9	SF5			
		24	2126	49.12	19	20.29	155	10.74	9.61	1.7	2.0	1.6	33	4	81	.08	4	0.4	0.6	22	SF3				
		24	2257	14.10	19	27.36	154	53.13	5.91	0.8	1.2	1.4	27	4	144	.14	3	0.5	0.7	24	IER				
		25	721	33.45	19	27.41	154	53.94	5.92	1.4	1.7	33	4	140	.12	2	0.6	0.5	31	HIL	B*				
		25	14	7	41.49	19	40.37	155	2.83	2.08	2.8	3.3	2.0	29	0	230	.14	19	1.2	15.3	34	HIL	B*		
		25	1843	2.45	19	23.16	155	14.63	3.52	1.8	1.6	1.4	25	6	59	.08	3	0.3	0.3	13	SEC				
		25	2348	44.43	19	24.18	155	17.29	9.52	1.8	1.9	1.2	19	2	59	.14	1	0.7	0.9	18	INT	L			
		26	018	56.56	19	22.93	155	22.87	9.54	1.7	1.4	1.3	34	6	51	.12	5	0.3	0.4	29	KAO				
		26	038	11.97	19	25.71	155	15.88	8.02	2.0	1.2	1.8	2	181	.15	2	1.1	0.8	17	INT	L				
		26	1015	13.05	19	44.34	155	1.73	0.00	2.4	3.0	1.9	17	0	257	.30	7	6.0	3.9	21	HIL	B*			
		26	1345	47.15	19	26.33	155	17.48	11.37	1.9	2.2	1.2	14	6	165	.10	2	1.5	0.7	9	INT	L			
		26	1452	49.61	19	11.82	155	41.65	0.02	1.4	1.3	1.2	1	212	.13	10	1.5	0.8	8	LSW	*				
		26	16	7	38.73	19	23.09	155	2.68	7.64	2.0	2.0	1.9	27	3	124	.13	3	0.6	0.9	15	SF5			
		26	1633	2.43	19	19.82	155	12.23	8.12	1.8	2.2	1.9	36	3	82	.12	5	0.5	0.6	29	SF3				
		26	1720	26.31	19	18.28	155	13.31	6.47	0.9	1.5	1.4	26	1	87	.09	2	0.5	1.0	16	SF2				
		26	2031	48.74	19	20.81	155	28.51	10.27	1.2	1.2	25	2	40	.11	3	0.4	0.7	12	KAO					
		26	2348	38.68	19	25.68	155	16.37	3.49	1.3	2.6	1.0	16	0	174	.10	2	0.7	0.5	17	SNC	L			
		27	236	4.94	19	21.24	155	4.82	7.09	0.8	1.4	1.5	37	5	92	.14	4	0.5	0.5	36	SF5				
		27	632	31.20	19	22.89	155	3.95	8.39	2.0	2.0	31	3	96	.12	3	0.5	0.4	27	SF5					
		27	1133	58.95	19	23.56	155	29.86	9.61	1.6	1.4	1.5	30	2	51	.10	4	0.4	0.6	23	KAO				
		27	12	0	42.20	19	11.12	155	18.52	4.97	2.6	2.5	1.1	6	0	337	.25	17	22.2	20.4	1	SWR	L*		
		27	1941	51.64	19	20.38	155	7.69	8.42	2.5	3.0	2.7	52	8	89	.12	5	0.4	0.5	37	SF4				
		27	2058	24.33	19	20.22	155	6.40	7.89	1.2	1.6	1.5	28	2	113	.11	6	0.5	0.7	16	SF4				
		28	1	8	39.99	19	20.93	155	7.00	8.59	2.2	2.8	2.1	50	7	91	.11	5	0.4	0.4	47	SF4			
		28	150	44.53	19	24.28	155	16.03	1.48	2.3	2.9	1.8	22	5	84	.16	1	0.3	0.3	19	SEC	L			
		28	748	16.97	19	19.81	155	6.87	6.95	1.8	1.9	1.7	43	6	115	.12	5	0.4	0.6	38	SF4				

## 1989 HVO EARTHQUAKE SUMMARY LIST

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ORIGIN TIME			LAT N		LON W		DEPTH		AMP		DUR		CD		GAP				RMS		MIN		ERH		ERZ		NO	
YEAR	MON	DA	HRMN	SEC	DEG	MIN	DEG	MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	RM	FM	RMK								
1989	SEP	28	753	15.65	19	25.85	155	15.75	7.58	2.3	1.6	20	3	148	.13	3	0.8	0.7	18	INT	L							
		28	1033	37.94	19	24.84	155	16.77	2.64	2.4	1.6	1.9	4	92	.13	0	0.4	0.2	16	SNC	L							
		28	11	5	34.16	19	20.11	155	8.40	7.15	1.9	1.5	1.5	29	4	79	.10	4	0.5	0.8	25	SF4						
		28	1111	11.25	19	20.11	155	8.65	6.69	2.1	2.0	39	6	74	.11	4	0.4	0.8	34	SF4								
		28	1531	20.16	19	23.36	155	20.94	3.76	1.8	2.1	1.4	10	1	195	.11	2	1.0	0.9	1	KAO	L						
28	23	2	19.58	19	24.46	155	18.71	8.38	2.3	1.5	19	3	77	.13	2	0.7	1.0	18	INT	L								
		28	23	6	15.92	19	23.64	155	17.23	9.32	2.2	1.5	19	3	57	.11	1	0.6	0.8	16	INT	L						
		28	2343	55.07	19	19.27	154	59.19	37.27	2.6	2.8	2.2	57	7	209	.11	7	1.0	0.5	51	LER							
		29	217	39.67	19	19.96	155	7.27	7.62	1.6	1.7	1.7	52	11	104	.10	5	0.3	0.4	45	SF4							
		29	235	2.18	19	25.41	155	16.28	8.48	2.1	2.6	1.3	19	4	120	.11	2	0.8	0.4	17	INT	L						
29	338	25.08	19	24.05	155	17.95	8.63	1.7	1.9	1.1	20	4	50	.12	2	0.7	0.8	17	INT	L								
		29	850	56.25	19	25.61	155	15.53	7.33	2.3	1.8	27	2	89	.16	3	0.5	0.5	26	INT	L							
		29	1138	45.46	19	30.43	155	17.21	3.53	2.0	1.5	1.5	11	1	277	.15	5	2.0	1.2	0	GLN	L						
		29	15	1	12.58	19	26.37	155	14.86	8.25	2.3	2.3	1.4	13	1	219	.20	4	1.6	1.3	1	INT	L					
		29	15	2	59.62	19	26.64	155	15.12	13.26	2.4	1.6	1.5	13	3	211	.14	3	1.9	1.0	1	DEP	L					
29	20	4	10.62	19	26.87	155	14.90	10.39	2.5	1.8	16	8	219	.12	4	1.1	1.0	8	INT	L								
		29	2023	26.05	19	25.78	155	17.09	12.79	2.1	1.8	1.5	15	8	123	.14	2	1.6	1.0	7	INT	L						
		29	21	9	43.85	19	25.93	155	15.87	10.42	2.1	1.6	1.4	16	8	152	.10	3	0.9	0.8	8	INT	L					
		29	2125	3.54	19	46.86	155	29.41	17.13	0.9	1.4	1.7	27	6	114	.12	3	0.5	0.8	21	KEA							
		29	2152	3.18	19	26.19	155	17.34	7.83	2.1	1.9	1.3	14	6	97	.11	2	0.7	1.2	10	INT	L						
29	23	2	59.75	19	28.28	155	15.00	8.19	2.0	1.3	1.3	17	9	269	.14	3	0.8	1.5	8	GLN	L							
		30	043	24.62	19	26.44	155	15.71	11.10	2.3	1.9	1.6	13	6	177	.12	3	1.4	0.9	8	INT	L						
		30	4	19.63	19	22.19	155	2.50	7.40	1.7	1.4	1.7	40	6	135	.15	4	0.5	0.4	36	SFS							
		30	450	27.86	19	22.92	155	18.24	11.53	2.4	2.6	1.7	17	7	197	.13	2	1.6	0.7	13	INT	L						
		30	717	2.28	19	26.84	155	16.08	8.97	2.1	1.7	1.5	19	9	173	.14	2	1.0	0.7	11	INT	L						
30	846	23.81	19	26.67	155	15.36	7.62	2.0	1.5	1.4	14	7	200	.11	3	0.7	1.1	8	INT	L								
		30	1011	27.09	19	25.98	155	16.53	10.86	2.2	1.9	1.5	21	10	126	.11	2	1.0	0.7	12	INT	L						
		30	1113	26.82	19	26.35	155	16.95	7.56	2.1	1.9	1.5	17	6	114	.09	2	0.8	1.0	12	INT	L						
		30	1154	47.99	19	20.54	155	5.78	7.28	2.1	1.7	2.0	37	8	110	.16	5	0.4	0.5	33	SF4							
		30	1223	49.88	19	25.34	155	15.65	12.08	2.1	1.4	1.4	5	139	.12	2	1.4	1.0	10	INT	L							
30	1237	49.14	19	16.75	155	25.76	7.75	2.1	1.9	1.8	27	2	72	.12	5	0.4	0.7	29	LSW									
		30	1557	59.71	19	26.27	155	15.39	9.74	2.1	1.6	1.3	13	6	185	.10	3	0.8	1.1	7	INT	L						
		30	1646	54.36	19	25.70	155	17.16	12.28	2.4	1.8	1.5	10	1	7	98	.10	1	0.7	0.8	11	INT	L					
		30	1752	15.94	19	25.93	155	14.03	12.78	2.4	1.9	1.5	18	8	218	.12	2	1.3	0.7	11	INT	L						
		30	1852	59.63	19	26.75	155	13.67	11.86	2.3	2.0	1.4	13	5	242	.07	4	1.5	0.7	9	GLN	L						
30	1956	14.71	19	26.91	155	15.35	12.91	2.1	1.1	1.4	13	5	208	.11	3	1.9	1.1	10	INT	L								
		30	2341	9.70	19	25.27	155	15.57	11.79	2.6	2.1	1.8	14	6	138	.13	2	1.3	0.7	9	INT	L						
		30	2346	33.53	19	26.27	155	15.60	10.54	2.2	2.0	1.6	16	9	177	.12	3	0.9	1.0	8	INT	L						
		OCT	1	6	14.85	19	27.00	155	14.07	10.57	2.4	2.3	1.7	15	8	240	.10	4	1.0	1.0	9	INT	L					
		1	353	1.54	19	27.52	155	18.13	8.09	2.1	1.7	5	1	167	.03	3	2.7	8.1	1	INT	L							
1	634	35.41	19	24.60	155	18.92	13.77	2.6	1.5	9	1	132	.05	2	1.5	2.0	0	DEP	L									
		1	728	22.49	19	26.73	155	15.89	8.10	2.4	2.9	1.6	20	5	108	.11	2	0.7	0.8	5	INT	L						
		1	737	45.53	19	23.04	155	14.87	5.81	1.6	1.7	1.0	8	1	220	.10	2	0.9	1.7	2	INT	L						
		1	850	36.96	19	23.63	155	19.09	4.87	2.2	3.0	1.5	18	2	87	.13	1	0.6	0.9	2	KAO	L						
		1	980	22.59	19	9.48	155	36.29	7.95	2.3	2.3	2.0	29	2	125	.14	10	0.4	0.9	12	LSW							





## 1989 HVO EARTHQUAKE SUMMARY LIST

ORIGIN TIME			LAT N		LON W		DEPTH AMP		CD		GAP		RMS		MIN		ERR		ER2		
YEAR	MON	DA	HR	MM	SEC	DEG	MIN	KM	MAG	DUR	NR	NS	DEG	SEC	DIS	KM	KM	FM	RMK		
1989	OCT	9	743	32.10	19	24.88	155	21.44	22.01	2.1	1.8	1.3	9	2	132	.05	4	2.3	1.9	0 DML L	
		9	757	59.21	19	23.15	155	18.19	8.36	1.7	2.0	1.0	10	3	125	.10	2	0.9	0.8	0 INT L	
		9	854	23.51	19	25.30	155	15.24	16.19	2.1	1.8	1.1	10	2	121	.12	4	2.4	1.5	0 DEP L	
		9	858	58.89	19	22.75	155	14.55	3.56	1.6	1.8	1.6	22	7	89	.09	2	0.3	0.3	12 SEC	
		9	1056	19.17	18	27.40	156	6.82	37.39	2.2	1.9	2.4	3	330	.17	75	2.4	4.1	21 DIS		
		9	1412	29.04	19	21.81	155	12.91	2.99	1.3	1.1	1.4	19	5	102	.09	2	0.4	0.4	14 SER	
		9	1629	0.75	20	4.52	155	29.39	9.99	2.3	2.0	2.1	36	4	222	.11	26	1.0	0.6	34 KEA	
		9	1713	59.21	19	24.62	155	17.23	7.41	1.9	2.4	1.3	15	1	80	.12	1	0.7	0.8	15 INT L	
		9	2117	23.25	19	24.27	155	16.14	5.88	1.6	2.0	1.2	16	1	64	.12	2	0.5	0.7	15 INT L	
		10	017	30.88	19	25.49	155	16.22	9.61	2.1	1.4	1.9	3	124	.16	2	0.9	0.7	17 INT L		
1990	JAN	10	210	9.70	19	21.87	155	13.17	2.96	1.6	1.3	1.3	23	5	70	.08	1	0.4	0.3	19 SER	
		10	336	37.36	19	19.66	155	28.48	10.00	1.6	1.6	1.3	32	3	41	.13	5	0.4	0.5	32 KAO	
		10	456	1.25	19	22.84	155	19.15	10.44	2.0	1.3	1.6	2	89	.12	2	0.8	1.3	17 KAO L		
		10	850	12.61	19	24.45	155	18.07	7.98	2.0	1.2	18	2	54	.18	2	0.6	0.7	17 INT L		
		10	9	39.76	19	23.61	155	17.67	5.96	1.8	2.0	1.3	19	3	50	.14	1	0.5	0.9	17 INT L	
		10	912	50.27	19	23.19	155	17.81	5.03	1.7	2.0	1.2	16	2	78	.12	2	0.5	1.0	17 INT L	
		10	923	23.15	19	24.44	155	16.95	7.98	1.9	2.0	1.4	17	1	80	.08	1	0.5	0.8	17 INT L	
		10	928	11.80	19	23.13	155	18.57	6.03	2.1	2.5	1.4	18	2	54	.18	2	0.6	1.3	18 INT L	
		10	938	22.28	19	25.16	155	15.83	5.19	1.5	1.5	1.0	16	2	124	.12	2	0.5	0.5	15 INT L	
		10	947	50.63	19	24.06	155	16.87	9.40	2.0	1.4	1.9	2	73	.15	1	0.6	1.0	17 INT L		
1991	FEB	10	957	37.15	19	24.33	155	17.47	7.17	1.9	2.1	1.3	16	1	55	.10	1	0.5	0.7	16 INT L	
		10	1015	43.75	19	23.80	155	17.81	7.87	2.0	2.2	1.4	22	4	47	.13	2	0.5	0.8	19 INT L	
		10	1035	7.08	19	22.73	155	18.09	7.13	2.1	2.2	1.3	20	3	67	.15	2	0.6	1.1	17 INT L	
		10	1042	41.81	19	25.37	155	15.55	6.49	1.9	2.2	1.4	20	1	144	.17	2	0.9	0.7	19 INT L	
		10	1059	14.43	19	24.10	155	17.80	10.35	1.7	1.7	1.1	19	3	46	.10	2	0.8	0.9	16 INT L	
		10	11	6	3.98	19	26.16	155	14.47	7.34	1.7	1.8	1.1	20	5	211	.12	5	1.0	0.6	16 INT L
		10	1110	0.05	19	23.99	155	16.87	9.60	1.7	1.9	1.1	19	5	109	.09	1	0.7	0.6	14 INT L	
		10	1115	48.46	19	24.49	155	15.77	7.01	1.9	2.3	1.4	22	4	96	.18	2	0.7	0.6	18 INT L	
		10	1147	26.57	19	24.60	155	15.53	6.24	2.0	2.6	1.5	14	1	69	.07	1	0.6	1.1	1 INT L	
		10	12	5	19.44	19	25.47	155	15.88	8.62	2.1	2.8	1.4	9	1	136	.11	2	1.1	1.5	1 INT L
1992	MAR	10	1222	46.22	19	26.47	155	17.17	8.79	1.8	2.0	1.3	7	1	116	.03	2	0.9	1.5	1 INT L	
		10	1230	42.62	19	24.06	155	16.29	12.43	2.1	3.0	1.4	18	5	76	.13	1	1.0	0.7	1 INT L	
		10	1257	6.84	19	24.57	155	16.88	7.33	2.0	3.0	1.6	11	2	115	.15	2	1.1	0.9	2 INT L	
		10	1310	5.89	19	24.30	155	17.64	11.30	2.2	2.8	1.5	14	3	66	.11	2	1.0	1.1	3 INT L	
		10	1330	24.44	19	24.33	155	18.08	9.62	2.1	2.3	1.4	14	2	64	.14	2	1.0	2.0	4 INT L	
		10	15	6	4.66	19	24.77	155	18.20	5.89	2.0	1.5	20	3	64	.14	2	0.5	0.8	1 INT L	
		10	1534	50.11	19	25.54	155	15.98	9.90	2.4	3.0	1.6	18	2	136	.12	2	1.1	0.7	3 INT L	
		10	1550	31.42	19	24.57	155	0.92	6.94	1.8	2.1	1.8	35	4	129	.12	4	0.4	0.6	22 SF5	
		10	16	6	42.24	19	26.71	155	15.71	11.67	2.1	2.5	1.5	13	2	187	.15	3	2.0	1.3	1 INT L
		10	1622	16.10	19	25.02	155	17.21	7.60	2.0	2.6	1.4	11	2	87	.09	1	0.9	1.1	0 INT L	
1993	APR	10	1642	13.35	19	23.54	155	16.99	7.81	2.1	2.2	1.3	14	1	101	.10	0	0.8	1.0	4 INT L	
		10	17	0	59.57	19	23.13	155	17.64	9.63	1.7	1.6	1.1	12	4	92	.12	1	1.7	1.3	3 INT L
		10	17	7	23.52	19	24.97	155	16.14	7.93	2.1	2.9	1.3	15	1	109	.14	2	0.9	1.1	6 INT L
		10	1729	41.54	19	23.36	155	17.20	10.53	2.1	2.4	1.5	16	5	95	.09	0	1.0	0.8	5 INT L	
		10	1746	38.77	19	24.97	155	17.17	9.88	2.1	2.6	1.5	17	5	87	.20	0	0.9	1.1	1 INT L	
		10	1750	10.00	19	24.00	155	17.00	10.00	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
		10	1751	10.01	19	24.01	155	17.01	10.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	
		10	1752	10.02	19	24.02	155	17.02	10.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	2.02	
		10	1753	10.03	19	24.03	155	17.03	10.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	
		10	1754	10.04	19	24.04	155	17.04	10.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	

## 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	DEG MIN	LON W	DEPTH		AMP	DUR	CD	GAP		RMS	MIN	ERH	ERZ	NO			
			HRMN	SEC				RM	MAG				NR	NS						DEC	DIS	RM
1989	OCT	7	10	6	15.01	19	24.35	155	18.53	9.88	2.3	1.6	18	6	140	.20	3	1.5	0.9	13	INT L	
		7	1314	11.75	19	25.69	155	17.29	11.46	2.1	2.7	1.4	14	4	168	.14	1	1.8	0.8	11	INT L	
		7	1637	58.11	19	26.21	155	16.74	11.22	2.2	2.4	1.4	13	3	122	.09	2	1.3	1.0	11	INT L	
		7	1658	38.39	19	25.22	155	17.04	12.18	2.0	2.0	1.3	12	3	156	.09	1	1.6	1.0	10	INT L	
		7	1742	13.87	19	24.74	155	17.73	13.94	2.5	1.7	1.7	5	73	.13	1	1.4	0.9	13	DEP L		
		7	19	7	49.86	19	12.37	155	27.45	3.90	2.1	1.8	1.6	28	3	114	.14	5	0.5	2.4	25	LSW
		7	1925	5.38	19	25.00	155	17.23	11.62	1.8	1.8	1.1	14	3	86	.07	1	0.7	1.0	11	INT L	
		7	1926	8.79	19	22.57	155	25.79	10.43	1.5	1.2	1.2	32	5	41	.11	3	0.4	0.6	25	KAO	
		7	1953	19.46	19	18.63	155	12.73	8.42	1.2	1.2	2.3	4	99	.07	3	0.5	0.8	21	SF2		
		7	2010	11.26	19	24.43	155	16.93	12.29	2.2	1.4	1.5	4	81	.09	1	1.0	1.0	12	INT L		
7	2022	40.02	19	24.67	155	16.05	9.33	1.8	2.0	1.1	12	4	136	.09	3	0.9	0.7	9	INT L			
		7	2043	54.54	19	25.39	155	14.64	6.93	1.6	1.5	1.1	14	6	190	.15	5	0.8	1.4	9	INT L	
		7	2138	49.47	19	25.11	155	16.45	12.40	2.2	2.0	1.3	12	1	106	.04	1	0.9	1.6	12	INT L	
		7	23	5	45.72	19	25.83	155	16.65	11.57	1.8	1.8	1.0	16	5	182	.15	2	1.9	0.9	11	INT L
		8	014	9.75	19	25.99	155	17.80	15.25	2.1	2.3	1.3	13	3	89	.10	1	1.8	0.9	11	DEP L	
		8	120	34.05	19	18.71	155	12.71	8.51	1.5	1.4	1.3	24	4	98	.07	3	0.5	0.9	22	SF2	
		8	122	58.51	19	25.28	155	17.32	7.35	2.1	2.9	1.1	14	1	89	.12	1	0.8	1.5	2	INT L	
		8	5	7.41	19	25.30	155	15.60	5.44	2.2	2.0	1.5	35	5	42	.12	3	0.3	0.7	22	KAO L	
		8	510	36.24	19	25.31	155	17.17	11.05	2.0	2.1	1.3	14	4	93	.11	1	1.2	0.6	11	INT L	
		8	642	30.24	19	17.43	155	14.16	7.36	1.5	1.5	1.4	24	2	140	.10	1	0.5	0.9	13	SF2	
8	717	24.99	19	23.97	155	16.69	5.68	1.6	2.1	1.2	7	0	102	.12	1	1.0	2.4	0	INT L			
		8	10	8	23.52	19	25.76	155	16.65	9.28	2.0	1.5	16	3	116	.10	2	0.9	1.1	8	INT L	
		8	1021	31.39	19	25.40	155	4.63	12.23	2.2	1.3	8	2	144	.09	2	1.9	1.8	7	SF5		
		8	1139	16.94	19	24.88	155	30.21	10.79	2.0	1.2	1.3	31	3	43	.09	6	0.4	0.7	21	KAO	
		8	1149	53.94	19	25.25	155	15.52	11.44	2.3	2.7	1.4	17	4	140	.09	2	1.2	0.6	1	INT L	
		8	13	7	0.42	19	24.09	155	26.30	9.62	1.9	1.7	1.5	37	2	28	.11	3	0.3	0.5	21	KAO
		8	1344	42.49	19	25.32	155	17.11	10.43	2.1	2.5	1.5	13	3	94	.11	1	1.2	0.8	11	INT L	
		8	1538	25.40	19	23.69	155	16.97	2.61	1.7	1.2	1.2	4	84	.09	1	0.4	0.5	8	SSC		
		8	1856	35.94	19	26.15	155	19.47	4.15	1.6	1.5	1.2	20	3	144	.10	3	0.4	0.7	15	KAO	
		8	19	8	39.77	19	24.48	155	16.73	6.16	1.9	2.7	1.3	13	2	84	.12	1	0.8	1.0	12	INT L
8	2220	28.72	19	25.09	155	17.07	9.76	1.8	2.3	1.2	15	3	91	.10	0	1.1	1.1	10	INT L			
		8	2348	51.49	19	26.13	155	15.96	11.67	2.1	2.8	1.5	15	6	155	.10	3	1.5	0.9	12	INT L	
		9	014	17.90	19	23.71	155	26.63	10.35	2.2	2.3	2.0	35	5	36	.11	3	0.4	0.7	32	KAO	
		9	049	23.70	19	25.90	155	6.35	2.68	1.8	1.3	6	2	177	.06	5	1.4	2.6	5	SME		
		9	1	46.00	19	18.77	155	13.39	9.02	2.2	2.6	2.1	49	6	131	.13	7	0.4	0.5	33	SF2	
		9	123	20.15	19	17.82	155	20.99	7.37	1.5	1.5	1.3	26	2	122	.09	4	0.3	0.7	16	SWR	
		9	2	51.03	19	25.21	155	15.57	9.66	1.7	1.9	1.2	10	0	209	.15	3	2.9	3.7	1	INT L	
		9	3	43.40	19	21.05	155	8.13	8.34	1.6	1.9	1.7	39	5	74	.12	4	0.4	0.5	27	SF4	
		9	553	46.95	19	24.46	155	17.60	5.23	1.8	1.4	1.1	0	86	.11	1	0.9	1.1	14	INT L		
		9	556	25.06	19	25.01	155	17.96	2.65	1.6	1.5	1.5	1	67	.30	1	1.1	0.5	2	SNC L		
9	647	10.07	19	24.81	155	16.61	10.26	2.0	2.3	1.3	11	2	124	.23	1	1.5	1.5	1	INT L			
		9	7	20.97	19	25.23	155	17.24	6.90	1.8	2.1	1.2	8	0	144	.05	1	0.8	1.6	1	INT L	
		9	713	36.69	19	24.56	155	18.11	13.77	2.2	2.5	1.4	10	3	105	.19	2	1.5	1.6	1	DEP L	
		9	721	10.00	19	24.75	155	15.79	9.73	1.9	1.9	1.2	11	3	112	.09	2	1.5	0.8	1	INT L	
		9	737	3.97	19	24.26	155	17.00	12.98	2.1	2.3	1.3	19	6	86	.21	0	1.5	1.0	1	INT L	
		9	740	10.00	19	24.75	155	15.79	9.73	1.9	1.9	1.2	11	3	112	.09	2	1.5	0.8	1	INT L	
		9	747	10.00	19	24.75	155	15.79	9.73	1.9	1.9	1.2	11	3	112	.09	2	1.5	0.8	1	INT L	
		9	750	10.00	19	24.75	155	15.79	9.73	1.9	1.9	1.2	11	3	112	.09	2	1.5	0.8	1	INT L	
		9	753	10.00	19	24.75	155	15.79	9.73	1.9	1.9	1.2	11	3	112	.09	2	1.5	0.8	1	INT L	
		9	756	10.00	19	24.75	155	15.79	9.73	1.9	1.9	1.2	11	3	112	.09	2	1.5	0.8	1	INT L	



## 1989 HVO EARTHQUAKE SUMMARY LIST

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YEAR	MON	DA	HRMN	SEC	LAT N	DEG MIN	DEG MIN	DEG MIN	DEPTH	AMP	DUR	CD	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	RMS	MIN	ERH	ER2	NO	RM	FN	RMK		
1989	OCT	11	12	7	34.50	19	16.09	155	30.23	10.08	1.8	1.9	1.9	42	2	55	.13	2	0.4	0.6	27	LSW	0.6	0.6	27	LSW	0.6	0.6	27	LSW
					11 1244	12.78	19 23.71	155	16.85	10.07	1.9	1.6	1.2	17	5	70	.13	1	1.2	0.7	1	1.2	0.7	1	INT L	0.7	0.7	1	INT L	
					11 1352	26.45	19 25.71	155	15.88	9.67	2.0	2.0	1.3	13	7	225	.12	2	1.2	0.7	1	1.2	0.7	1	INT L	0.7	0.7	1	INT L	
					11 1421	52.80	19 25.44	155	15.99	12.61	2.0	1.6	1.3	18	6	150	.10	2	1.3	0.6	4	1.3	0.6	4	INT L	0.6	0.6	4	INT L	
					11 1457	38.10	19 22.35	155	29.74	10.14	1.2	1.3	25	2	42	.12	4	0.4	0.7	15	0.4	0.7	15	INT L	0.7	0.7	15	INT L		
					11 1523	6.10	19 24.32	155	18.04	12.25	2.2	2.1	1.5	16	5	116	.13	2	1.7	0.7	4	1.7	0.7	4	INT L	0.7	0.7	4	INT L	
					11 16 5	8.40	19 23.47	155	17.01	12.13	2.1	1.6	1.3	19	3	123	.18	0	1.3	0.9	5	1.3	0.9	5	INT L	0.9	0.9	5	INT L	
					11 1631	43.30	19 24.72	155	15.20	9.72	2.0	1.6	1.3	10	2	116	.08	2	1.6	1.1	1	1.1	1	1	INT L	1.1	1.1	1	INT L	
					11 1659	19.33	19 22.42	155	3.27	7.59	2.1	2.0	2.1	44	6	115	.11	4	0.3	0.5	28	0.5	0.5	28	SF5	0.5	0.5	28	SF5	
					11 17 0	47.07	19 24.66	155	16.34	12.13	2.1	2.5	1.5	15	3	94	.10	1	1.4	0.6	2	1.4	0.6	2	INT L	0.6	0.6	2	INT L	
					11 1725	19.45	19 25.06	155	16.58	11.78	2.6	2.6	1.4	18	6	128	.10	1	1.1	0.6	3	1.1	0.6	3	INT L	0.6	0.6	3	INT L	
					11 18 2	7.28	19 23.48	155	17.36	9.39	1.9	1.1	1.9	4	70	.11	1	0.7	0.9	16	0.7	0.9	16	INT L	0.9	0.9	16	INT L		
					11 1832	38.36	19 25.40	155	16.12	9.35	2.1	1.9	1.3	23	5	125	.06	2	0.7	0.4	18	0.7	0.4	18	INT L	0.4	0.4	18	INT L	
					11 1848	5.17	19 25.24	155	16.71	11.92	2.1	1.9	1.2	23	5	103	.14	1	1.0	0.4	18	1.0	0.4	18	INT L	0.4	0.4	18	INT L	
					11 1913	42.60	19 24.74	155	17.23	10.72	2.1	1.7	1.3	21	4	44	.13	0	0.7	0.6	18	0.7	0.6	18	INT L	0.6	0.6	18	INT L	
					11 1942	17.13	19 24.99	155	17.04	9.12	2.1	1.6	1.3	21	4	91	.13	0	0.7	0.5	18	0.7	0.5	18	INT L	0.5	0.5	18	INT L	
					11 2014	27.19	19 25.24	155	16.98	10.54	2.1	1.6	1.3	22	4	96	.11	1	0.8	0.5	18	1.0	0.8	0.5	18	INT L	0.5	0.5	18	INT L
					11 2030	27.17	20 4.21	155	31.47	37.91	1.8	1.6	1.3	38	3	212	.11	27	1.3	0.7	37	1.3	0.7	37	KEA	0.7	0.7	37	KEA	
					11 2041	22.78	19 24.38	155	16.50	11.73	2.1	1.6	1.4	22	4	83	.18	1	1.0	0.7	18	1.0	0.7	18	INT L	0.7	0.7	18	INT L	
					11 2113	7.89	19 24.93	155	16.82	10.35	2.1	1.6	1.2	22	4	94	.14	0	0.8	0.6	18	0.8	0.6	18	INT L	0.6	0.6	18	INT L	
					11 2136	41.65	19 24.49	155	16.59	10.85	2.0	1.7	1.2	23	5	85	.12	1	0.8	0.5	18	1.0	0.8	0.5	18	INT L	0.5	0.5	18	INT L
					11 2212	47.86	19 23.71	155	17.80	10.30	2.2	2.0	1.3	23	5	48	.14	2	0.7	0.8	18	0.7	0.8	18	INT L	0.8	0.8	18	INT L	
					11 2253	2.30	19 24.79	155	17.02	10.37	2.0	2.0	1.2	21	4	82	.09	0	0.7	0.5	18	1.0	0.7	0.5	18	INT L	0.5	0.5	18	INT L
					12 0 1	45.32	19 25.42	155	16.77	10.65	1.9	1.6	1.2	23	5	105	.13	1	0.9	0.4	18	1.0	0.9	0.4	18	INT L	0.4	0.4	18	INT L
					12 034	35.28	19 25.05	155	16.49	9.36	1.9	1.9	1.2	19	3	103	.12	1	0.7	0.5	18	1.0	0.7	0.5	18	INT L	0.5	0.5	18	INT L
					12 127	5.00	19 25.81	155	15.90	11.53	1.9	1.6	1.2	23	5	143	.13	3	0.9	0.7	18	1.0	0.9	0.7	18	INT L	0.7	0.7	18	INT L
					12 2 9	7.26	19 24.71	155	17.45	10.64	2.3	2.8	1.3	22	5	52	.14	1	0.8	0.5	18	1.0	0.8	0.5	18	INT L	0.5	0.5	18	INT L
					12 226	3.01	19 24.70	155	15.66	11.84	2.0	1.2	22	4	107	.16	2	1.0	0.6	18	1.0	0.6	18	INT L	0.6	0.6	18	INT L		
					12 236	40.70	19 23.30	155	17.14	10.81	2.1	1.6	1.3	20	4	64	.10	0	0.7	0.9	18	1.0	0.7	0.9	18	INT L	0.9	0.9	18	INT L
					12 253	39.38	19 24.97	155	17.73	7.08	1.5	1.5	1.1	18	3	76	.13	1	0.7	0.7	18	1.0	0.7	0.7	18	INT L	0.7	0.7	18	INT L
					12 321	4.56	20 0.57	155	26.45	10.34	3.0	3.1	57	7	201	.12	17	0.6	0.4	53	0.6	0.4	53	KEA	0.4	0.4	53	KEA		
					12 322	13.26	20 1.27	155	25.79	8.33	1.2	1.5	2.3	49	5	204	.13	17	0.8	0.6	44	0.8	0.6	44	KEA	0.6	0.6	44	KEA	
					12 339	59.57	20 1.49	155	25.67	9.12	2.8	2.8	2.6	54	5	205	.12	17	0.5	0.4	50	0.5	0.4	50	KEA	0.4	0.4	50	KEA	
					12 433	45.23	19 25.15	155	17.32	14.94	2.2	1.6	1.3	16	2	118	.16	1	1.4	1.2	16	1.4	1.2	16	DEP L	1.2	1.2	16	DEP L	
					12 610	38.91	19 25.24	155	16.27	9.60	2.0	2.5	1.2	21	4	115	.08	1	0.7	0.5	18	1.0	0.7	0.5	18	INT L	0.5	0.5	18	INT L
					12 720	15.23	19 20.35	155	4.31	5.99	1.3	1.4	1.4	36	3	121	.14	3	0.5	0.9	35	0.5	0.9	35	SF5	0.5	0.9	35	SF5	
					12 742	59.21	19 25.55	155	15.45	10.56	1.9	1.7	1.0	12	4	215	.10	4	1.3	0.7	9	1.3	0.7	9	INT L	0.7	0.7	9	INT L	
					12 833	2.52	19 25.42	155	16.91	11.63	2.1	2.4	1.3	19	6	101	.16	1	1.3	0.8	2	1.3	0.8	2	INT L	0.8	0.8	2	INT L	
					12 945	24.60	19 25.76	155	16.04	11.52	2.1	2.8	1.3	16	5	139	.10	2	1.1	0.9	1	1.1	0.9	1	INT L	0.9	0.9	1	INT L	
					12 1150	4.68	19 19.85	155	6.55	8.47	2.3	3.0	2.3	48	5	119	.11	5	0.4	0.5	33	0.4	0.5	33	SF4	0.5	0.5	33	SF4	
					12 1539	42.12	19 22.37	155	18.96	8.94	1.9	2.0	1.0	8	1	150	.09	5	1.2	1.9	1	1.2	1.9	1	INT L	1.9	1.9	1	INT L	
					12 1648	58.57	20 1.23	155	25.75	9.37	2.2	2.0	1.9	23	1	219	.13	17	1.4	0.8	14	1.4	0.8	14	KEA	0.8	0.8	14	KEA	
					12 1722	43.47	20 1.06	155	25.74	9.61	1.2	1.4	1.6	21	1	218	.10	17	1.2	0.6	8	1.2	0.6	8	KEA	0.6	0.6	8	KEA	
					12 1753	3.32	19 24.24	155	17.18	1.67	1.8	2.0	1.2	17	5	66	.09	1	0.3	0.2	10	0.3	0.2	10	SSC L	0.2	0.2	10	SSC L	
					12 1817	18.96	19 19.55	155	8.84	6.64	1.6	1.7	1.6	31	1	81	.09	4	0.5	1.1	20	0.5	1.1	20	SF4	1.1	1.1	20	SF4	

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## 1989 HVO EARTHQUAKE SUMMARY LIST

ORIGIN TIME			LAT N	ION W	DEPTH AMP DUR			CD	GAP RMS MIN ERH			ER2 NO									
YEAR	MON	DA	HRMN	SEC	DEG	MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	RM	FN	RMK			
1989	OCT	12	2027	30.06	19	18.17	155	13.04	6.90	1.5	1.5	1.6	33	3	101	.13	2	0.5	0.7	23	SF2
		12	2036	55.76	19	18.41	155	13.04	7.88	1.5	1.9	1.6	41	2	95	.11	3	0.4	0.6	20	SF2
		12	2140	4.69	19	24.54	155	16.71	13.96	2.2	2.6	1.3	21	5	86	.10	1	0.9	0.6	18	DEP L
		13	136	8.80	19	19.75	155	12.42	8.51	1.4	1.5	1.5	43	4	81	.10	5	0.3	0.3	42	SF2
		13	323	56.90	19	24.34	155	15.93	11.75	1.8	1.6	0.9	11	3	190	.13	4	1.3	0.7	10	INT L
		13	1252	41.20	19	26.68	155	15.96	9.93	1.9	2.0	1.3	19	8	173	.12	2	1.0	0.8	12	INT L
		13	1519	36.48	19	22.62	155	26.47	9.49	1.9	1.3	1.6	42	7	126	.13	2	0.3	0.4	37	KAO
		13	1541	49.29	19	19.70	155	6.60	8.06	2.7	2.4	2.6	45	7	133	.11	5	0.3	0.3	45	SF4
		13	1634	15.51	19	22.66	155	26.21	9.14	1.5	1.2	1.4	35	6	46	.12	2	0.3	0.3	31	KAO
		13	2127	7.34	19	25.94	155	29.37	8.60	2.1	2.1	1.8	44	8	62	.12	7	0.3	0.5	40	KAO
		13	2131	53.23	19	22.40	155	30.05	9.73	1.2	1.3	2.9	3	48	.11	4	0.5	0.5	27	KAO	
		13	2226	10.65	19	19.02	155	0.79	37.51	2.3	1.6	2.0	59	15	203	.11	4	0.9	0.4	44	DEP
		14	419	56.53	19	26.69	155	14.73	9.57	1.7	1.9	1.2	18	2	194	.10	4	1.0	0.8	16	INT L
14	1325	16.45	19	24.35	155	17.08	1.87	2.2	2.0	1.5	25	10	75	.20	1	0.5	0.3	15	SSC L		
14	1756	23.63	19	20.09	155	9.01	7.49	2.5	2.2	2.5	56	8	74	.12	4	0.3	0.4	51	SF4		
14	1958	39.35	19	24.54	155	17.55	7.78	1.9	2.0	1.3	17	2	43	.15	1	0.6	0.7	17	INT L		
15	240	29.55	19	19.66	155	7.08	7.98	2.1	2.0	2.0	51	7	114	.11	5	0.3	0.3	47	SF4		
15	1529	36.26	19	22.68	155	17.09	19.01	2.0	1.7	1.1	9	0	83	.10	2	2.6	5.8	0	DEP L		
15	16	1	36.01	19	19.81	155	7.74	7.44	1.6	1.7	34	2	97	.11	5	0.5	0.9	19	SF4 L		
15	1944	2.60	19	20.17	155	6.59	5.14	1.6	1.3	1.4	27	1	111	.13	6	0.5	1.8	13	SF4		
15	1951	35.31	19	22.20	155	18.46	0.02	1.2	1.8	1.2	9	2	142	.13	3	0.4	0.6	0	SSC L <sup>1</sup>		
15	2215	1.50	19	21.09	155	11.26	8.62	1.4	1.2	1.3	38	5	68	.13	3	0.5	0.4	34	SF3		
16	1025	49.56	20	23.85	154	4.90	32.50	3.2	4.7	3.2	49	9	319	.12	125	1.7	3.0	48	DTS		
16	1604	54.10	19	19.12	155	13.50	6.13	1.1	1.4	3.7	6	71	.14	4	0.3	0.6	32	SF2			
16	1128	46.72	19	20.19	155	6.79	6.88	1.2	1.4	2.9	5	108	.12	6	0.4	0.8	27	SF4			
16	1149	17.33	19	18.92	155	13.69	5.85	1.1	1.1	1.22	4	86	.12	4	0.4	1.0	20	SF2			
16	1644	10.36	19	24.77	155	16.07	11.93	1.9	1.9	1.2	16	4	103	.07	2	1.3	0.8	2	INT L		
16	1735	5.92	19	20.29	155	19.34	6.02	1.9	1.8	1.1	6	1	308	.13	6	3.3	5.4	1	SWR L		
16	1830	59.08	19	26.18	155	17.08	6.63	1.8	2.7	1.3	15	1	190	.13	2	0.7	1.3	1	INT L		
16	1843	11.13	19	27.59	155	16.47	8.56	1.7	1.6	1.2	11	2	180	.10	1	2.0	1.6	0	INT L		
16	1922	50.52	19	25.59	155	16.15	10.65	2.1	2.6	1.4	8	0	130	.09	3	1.5	2.7	3	INT L		
16	20	1	47.07	19	29.05	155	14.52	12.01	2.1	1.5	13	1	252	.17	4	2.5	2.8	0	GLN L		
16	2149	2.51	19	25.04	155	16.52	12.50	2.0	2.4	1.3	20	3	102	.13	1	0.9	0.6	18	INT L		
17	021	8.28	19	24.20	155	17.47	9.69	1.8	2.1	1.0	21	4	48	.12	2	0.7	0.7	17	INT L		
17	2	51.23	19	24.59	155	17.15	9.83	1.6	1.7	0.9	23	3	64	.10	1	0.7	0.6	17	INT L		
17	1220	26.94	19	23.76	155	18.39	6.42	1.7	1.7	1.3	10	0	68	.08	2	1.6	3.9	0	INT L		
17	1259	44.37	19	23.07	155	2.68	7.09	1.7	1.6	1.7	35	2	124	.12	3	0.4	0.8	17	SFS		
17	2045	6.11	19	28.40	155	16.29	15.57	2.1	2.6	0.8	6	0	297	.06	1	4.5	8.8	0	DEP L <sup>1</sup>		
17	2348	19.67	20	0.18	155	34.57	9.42	1.7	1.8	1.7	27	4	173	.13	18	0.5	0.6	24	KOA		
18	034	51.79	19	20.91	155	16.96	1.92	1.2	1.5	26	9	68	.13	2	0.3	0.3	18	KOA			
18	035	14.39	19	21.02	155	17.05	2.24	1.4	1.8	1.5	21	4	61	.12	2	0.3	0.3	18	SWR		
18	056	12.60	19	21.03	155	17.02	2.39	1.1	1.1	1.2	19	4	62	.13	2	0.3	0.3	15	SWR		
18	319	24.43	19	25.22	155	16.15	8.46	1.8	1.2	1.8	3	118	.11	2	0.7	0.5	17	INT L			
18	320	0.27	19	25.23	155	15.65	6.69	1.9	2.1	1.3	18	3	133	.11	2	0.8	0.5	16	INT L		
18	337	19.61	19	24.78	155	16.39	11.31	1.8	1.6	1.3	18	2	97	.10	1	0.8	0.7	18	INT L		



## 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	LON W	DEPTH AMP		DUR	CD	GAP			RMS	MIN	ERH	ERZ NO					
			HR	MM			KM	MAG			NR	NS	DEG					SEC	DIS	KM	FM	RMK
1989	OCT	19	1011	57.67	19	19.97	155	6.80	6.72	1.9	1.2	1.4	32	5	112	.12	5	0.4	0.7	27	SF4	
		19	1015	24.11	19	24.76	155	16.99	10.59	2.3	2.6	1.5	20	3	86	.17	0	0.9	0.6	18	INT L	
		19	1028	49.53	19	24.33	155	17.50	10.15	2.1	2.6	1.4	21	5	44	.12	1	0.7	0.5	17	INT L	
		19	1046	21.14	19	24.63	155	17.10	10.08	2.3	2.7	1.5	21	4	70	.12	1	0.7	0.5	18	INT L	
		19	11	8	6.89	19	25.10	155	17.30	9.85	2.1	2.4	1.4	21	4	86	.10	1	0.8	0.6	17	INT L
		19	1122	51.81	19	25.72	155	15.66	8.19	2.1	2.4	1.4	19	2	148	.07	3	0.7	0.6	17	INT L	
		19	1138	52.42	19	24.88	155	15.82	10.32	2.1	1.5	2.1			42	.13	0	0.9	0.6	17	INT L	
		19	1140	4.65	19	26.43	155	15.61	7.81	2.1	2.6	1.6	19	4	221	.11	4	1.2	0.7	17	INT L	
		19	1152	53.43	19	25.31	155	16.67	11.58	2.1	2.4	1.4	19	2	105	.14	1	0.9	0.7	18	INT L	
		19	12	5	21.15	19	24.93	155	17.34	9.35	2.2	2.5	1.4	14	4	83	.15	1	1.1	0.8	1	INT L
19	DEC	19	1211	45.76	19	24.34	155	18.01	10.60	2.3	1.5	1.9	4	57	.10	2	0.7	0.7	18	INT L		
		19	1212	27.05	19	26.17	155	18.55	10.72	2.1	1.4	1.9	3	97	.15	2	1.0	0.6	18	INT L		
		19	1212	48.77	19	19.44	155	19.14	5.37	1.6	3.4	3	99	.10	5	0.4	1.2	32	SF3			
		19	1224	41.93	19	25.51	155	16.20	13.19	2.1	2.3	1.4	15	2	126	.21	2	2.2	1.3	3	DEP L	
		19	1240	45.09	19	23.42	155	17.61	7.66	2.3	2.9	1.5	17	5	157	.13	1	0.8	0.6	4	INT L	
		19	1257	3.75	19	25.10	155	18.43	10.20	2.4	2.8	1.5	18	3	71	.13	2	1.0	0.7	6	INT L	
		19	1318	6.70	19	25.02	155	17.53	9.08	2.3	1.5	1.4	3	87	.20	1	1.4	1.2	4	INT L		
		19	1321	20.06	19	18.59	155	13.36	5.06	1.5	1.6	3.1	0	82	.12	3	0.4	1.1	24	SF2		
		19	1345	44.18	19	25.76	155	18.06	6.27	2.1	2.7	1.5	12	2	85	.10	1	1.0	1.1	2	INT L	
		19	14	7	55.16	19	23.61	155	17.51	9.54	2.4	2.7	1.5	18	6	95	.14	1	1.0	0.7	4	INT L
19	DEC	19	1425	48.12	19	24.07	155	17.91	6.30	2.3	2.7	1.6	18	4	92	.09	2	0.4	0.8	1	INT L	
		19	1446	28.16	19	24.89	155	17.36	10.05	2.4	2.9	1.6	19	4	76	.15	1	0.7	0.9	0	INT L	
		19	15	1	47.70	19	26.13	155	16.48	11.75	2.6	3.7	1.6	19	5	131	.23	2	1.6	1.1	6	INT L
		19	1548	21.03	19	24.65	155	17.57	8.68	2.0	1.3	1.3	3	86	.13	1	1.3	1.0	3	INT L		
		19	1556	1.43	19	20.68	155	15.27	11.58	1.5	1.6	1.2	6	0	178	.07	2	0.8	1.7	0	SNC L	
		19	1520	55.18	19	25.41	155	15.71	8.45	2.1	1.4	1.2	2	140	.13	2	1.3	1.4	0	INT L		
		19	1535	37.96	19	27.26	155	14.92	9.89	2.1	2.7	1.3	16	5	223	.12	5	1.5	1.2	1	INT L	
		19	1542	30.14	19	27.99	155	15.32	1.12	1.6	1.8	1.2	11	3	270	.04	6	0.6	0.9	1	SNC L	
		19	1548	21.03	19	24.65	155	17.57	8.68	2.0	1.3	1.3	3	86	.13	1	1.3	1.0	3	INT L		
		19	1636	4.53	19	27.58	155	15.47	15.47	2.2	2.4	1.5	10	3	273	.13	5	3.6	1.0	0	DEP L	
19	DEC	19	16	6	10.67	19	25.84	155	15.12	8.05	1.9	2.2	1.3	11	3	184	.06	3	0.9	1.7	4	INT L
		19	1614	38.41	19	24.26	155	17.87	6.28	1.9	2.4	1.3	15	2	117	.10	2	0.7	0.6	7	INT L	
		19	1619	48.39	19	25.41	155	15.97	11.45	2.0	1.9	1.3	14	4	178	.09	2	1.9	0.6	2	INT L	
		19	1629	4.46	19	24.58	155	17.00	10.81	2.1	2.8	1.4	16	6	98	.16	1	1.6	0.9	2	INT L	
		19	1636	41.53	19	27.50	155	15.47	15.47	2.2	2.4	1.5	10	3	273	.13	5	3.6	1.0	0	DEP L	
		19	1646	19.26	19	24.21	155	17.95	4.86	1.9	2.8	1.4	12	0	120	.08	2	0.5	0.8	2	S5C L	
		19	1649	3.08	19	25.43	155	15.88	10.50	2.0	2.5	1.2	12	3	208	.09	2	2.1	0.9	2	INT L	
		19	1655	29.18	19	25.33	155	16.58	8.52	2.3	3.2	1.5	21	5	77	.09	1	0.5	0.4	18	INT L	
		19	17	6	32.78	19	24.54	155	16.24	8.74	2.0	2.3	1.2	20	3	92	.13	1	0.8	0.6	17	INT L
		19	1710	18.03	19	25.82	155	16.31	10.49	2.0	1.3	2.1	4	113	.14	1	0.9	0.6	17	INT L		
19	DEC	19	1711	8.63	19	19.58	155	11.62	8.70	2.0	2.5	2.1	40	3	93	.11	6	0.4	0.5	30	SF3	
		19	1720	42.99	19	24.35	155	17.55	11.15	1.9	2.3	1.2	14	2	84	.12	1	1.1	1.1	14	INT L	
		19	1727	3.12	19	24.42	155	16.44	9.13	2.0	2.7	1.4	18	2	85	.11	1	0.7	0.6	18	INT L	
		19	1733	32.48	19	25.83	155	18.45	10.87	2.0	2.7	1.4	19	4	155	.11	2	0.7	0.5	16	INT L	
		19	1737	47.75	19	23.60	155	16.35	10.87	1.9	1.9	1.1	20	5	172	.11	2	1.0	0.5	16	INT L	
		19	1740	19.26	19	24.21	155	17.95	4.86	1.9	2.8	1.4	12	0	120	.08	2	0.5	0.8	2	S5C L	
		19	1749	3.08	19	25.43	155	15.88	10.50	2.0	2.5	1.2	12	3	208	.09	2	2.1	0.9	2	INT L	
		19	1755	29.18	19	25.33	155	16.58	8.52	2.3	3.2	1.5	21	5	77	.09	1	0.5	0.4	18	INT L	
		19	1762	4.46	19	24.58	155	17.00	10.81	2.1	2.8	1.4	16	6	98	.16	1	1.6	0.9	2	INT L	
		19	1770	18.03	19	25.82	155	16.31	10.49	2.0	1.3	2.1	4	113	.14	1	0.9	0.6	17	INT L		

## 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	LON W		DEPTH AMP		DUR	CD	GAP			RMS	MIN	ERH	ER2				
			HR	SEC		KM	MAG	NR	NS			DEG	SEC	DIS					KM	FM	RMK	
1989	OCT	18	334	26.71	19	20.34	155	8.49	8.04	1.9	1.9	1.7	48	5	76	.11	4	0.3	0.4	45	SF4	
		18	423	23.80	19	24.72	155	16.02	9.49	2.0	1.9	1.2	20	2	102	.14	2	0.8	0.6	18	INT L	
		18	533	38.30	19	22.65	155	30.31	12.05	1.7	1.6	1.7	40	5	42	.11	5	0.3	0.4	36	KAO	
		18	539	35.10	19	25.23	155	15.19	10.53	2.1	2.5	1.3	18	2	152	.17	2	1.2	0.7	17	INT L	
		18	550	4.59	19	24.85	155	16.54	8.31	1.9	1.7	1.2	17	2	96	.11	1	0.6	0.5	18	INT L	
		18	556	34.85	19	24.90	155	16.55	8.20	1.8	1.9	1.3	18	3	98	.14	1	0.8	0.6	17	INT L	
		18	6	20.37	19	25.33	155	14.67	7.65	1.7	1.7	1.2	18	2	188	.15	1	1.1	0.9	16	INT L	
		18	635	32.48	19	25.44	155	15.55	10.47	2.1	3.1	1.5	19	2	146	.12	3	0.9	0.6	18	INT L	
		18	820	23.52	19	25.76	155	5.23	3.51	2.1	2.0	1.1	9	0	328	.30	20	22.4	23.0	11	SME	
		18	822	49.95	19	23.71	155	17.04	6.49	1.9		1.4	17	2	61	.12	1	0.5	0.8	18	INT L	
1989	OCT	18	1219	24.71	19	25.69	155	17.01	10.33	1.7	2.0	1.2	9	2	125	.15	1	1.5	1.3	2	INT L	
		18	1539	20.90	19	16.40	155	27.84	9.21	1.7	2.1	1.6	30	1	62	.12	5	0.4	0.8	18	LSW	
		18	1547	45.21	19	26.42	155	14.88	8.91	2.0	2.2	1.4	11	3	214	.12	3	1.1	0.6	1	INT L	
		18	1619	3.65	19	24.30	155	16.02	11.21	1.8	1.7	1.1	12	4	100	.13	2	1.2	0.7	1	INT L	
		18	18	3	58.58	19	24.18	155	0.78	8.34	2.1	2.2	1.9	49	5	136	.13	4	0.6	0.3	45	SF5
		18	1832	35.63	19	24.56	155	16.76	10.48	2.1	2.5	1.4	20	2	86	.14	1	0.8	0.7	18	INT L	
		18	1932	28.51	19	24.55	155	17.24	11.11	2.1		1.4	23	5	55	.13	1	0.9	0.6	18	INT L	
		18	20	5	9.55	19	25.77	155	15.44	10.72	1.9	1.6	1.2	21	4	166	.10	2	0.9	0.5	17	INT L
		18	2050	33.80	19	24.43	155	16.72	9.42	1.7	1.6	1.0	19	3	83	.08	1	0.7	0.6	16	INT L	
		18	2227	30.16	19	24.29	155	18.27	10.07	1.7	1.7	1.0	18	4	57	.18	2	0.9	1.1	14	INT L	
19	OCT	19	046	56.04	19	28.39	155	13.14	9.72	2.0	1.6	1.6	50	9	93	.14	6	0.3	0.7	43	GLN	
		19	214	21.89	19	24.89	155	16.16	10.62	2.0	2.0	1.2	23	5	106	.10	1	0.8	0.5	18	INT L	
		19	227	53.55	19	28.48	155	28.56	10.22	1.9	1.6	1.4	41	6	41	.13	6	0.3	0.93	KAO		
		19	258	57.44	19	24.25	155	17.53	11.85	1.9	1.9	1.2	21	4	44	.12	2	0.7	0.8	17	INT L	
		19	346	32.13	19	25.10	155	15.67	10.90	1.9	1.6	1.1	20	5	127	.11	2	1.1	0.6	16	INT L	
		19	4	57.80	19	24.69	155	16.92	10.38	2.2	2.7	1.4	22	4	86	.17	0	0.8	0.8	19	INT L	
		19	525	42.46	19	25.48	155	15.73	8.88	2.2	2.8	1.5	21	4	142	.12	2	0.9	0.5	18	INT L	
		19	542	14.93	19	24.80	155	17.52	10.71	1.9	1.6	1.1	20	4	68	.14	1	0.9	0.6	17	INT L	
		19	555	2.74	19	24.97	155	15.78	7.10	1.7	1.7	1.1	21	3	117	.18	2	0.8	0.6	18	INT L	
		19	6	23.21	19	25.02	155	14.14	7.72	1.8	1.8	1.5	11	15	6	240	.11	5	1.6	0.7	13	INT L
19	OCT	19	615	30.00	19	26.00	155	15.44	10.41	1.9	1.6	1.0	16	4	174	.08	3	1.0	0.6	12	INT L	
		19	626	19.33	19	23.62	155	17.71	9.82	2.2	2.3	1.4	20	3	50	.13	1	0.6	1.1	17	INT L	
		19	634	21.43	19	20.44	155	7.06	7.13	2.1	2.1	2.0	39	3	99	.10	5	0.5	0.6	40	SF4	
		19	641	18.61	19	24.17	155	16.71	9.00	2.1	2.1	1.4	22	5	77	.13	1	0.8	0.6	17	INT L	
		19	657	50.46	19	24.47	155	17.67	7.74	1.9	1.7	1.2	21	4	45	.11	1	0.5	0.6	18	INT L	
		19	718	21.49	19	24.46	155	17.06	12.41	2.1	2.7	1.4	19	3	78	.14	1	1.0	0.8	17	INT L	
		19	730	22.67	19	25.30	155	16.44	8.87	2.0	2.1	1.2	22	5	112	.15	1	0.8	0.5	17	INT L	
		19	749	0.30	19	26.00	155	17.10	9.94	2.1	2.7	1.4	20	4	104	.09	1	0.9	0.6	18	INT L	
		19	8	36.88	19	24.40	155	16.89	10.33	2.1	2.7	1.4	19	3	80	.15	1	0.9	0.7	17	INT L	
		19	850	51.89	19	23.55	155	16.71	10.77	2.3	3.1	1.7	21	4	46	.14	1	0.8	0.7	18	INT L	
19	OCT	19	9	57.89	19	24.75	155	16.88	11.52		2.0	1.3	18	3	88	.12	0	0.9	0.6	16	INT L	
		19	917	28.95	19	24.83	155	17.37	10.92	2.1	2.6	1.3	18	2	66	.10	1	0.6	0.6	18	INT L	
		19	933	59.36	19	23.30	155	18.41	10.80	2.4	2.8	1.6	19	2	54	.17	2	0.7	1.2	18	INT L	
		19	949	59.61	19	25.15	155	16.77	11.05	2.1	2.3	1.3	19	3	76	.13	1	0.8	0.7	17	INT L	
		19	10	1	58.16	19	24.67	155	15.55	9.41	2.1	2.7	1.5	21	3	149	.17	3	1.0	0.7	18	INT L
		19	10	1	58.16	19	24.67	155	15.55	9.41	2.1	2.7	1.5	21	3	149	.17	3	1.0	0.7	18	INT L
		19	10	1	58.16	19	24.67	155	15.55	9.41	2.1	2.7	1.5	21	3	149	.17	3	1.0	0.7	18	INT L
		19	10	1	58.16	19	24.67	155	15.55	9.41	2.1	2.7	1.5	21	3	149	.17	3	1.0	0.7	18	INT L
		19	10	1	58.16	19	24.67	155	15.55	9.41	2.1	2.7	1.5	21	3	149	.17	3	1.0	0.7	18	INT L
		19	10	1	58.16	19	24.67	155	15.55	9.41	2.1	2.7	1.5	21	3	149	.17	3	1.0	0.7	18	INT L

## 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	LON W	DEPTH AMP		DUR	CD	GAP				RMS	MIN	ERR	ERZ NO			
			HR	MM			KM	MAG			NR	NS	DEG	SEC					DIS	KM	FM
1989	OCT	19	23	6	15.49	19 25.94	155	14.84	10.02	2.1	2.6	1.5	17	2	136	.08	2	1.0	0.7	16	INT L
		19	2332	29.41	19 25.07	155	15.85	10.83	2.1	1.9	1.3	21	4	121	.11	2	0.9	0.5	15	INT L	
		19	2330	54.21	19 25.99	155	14.09	9.18	2.1	1.7	1.4	19	3	243	.10	2	1.1	0.8	15	INT L	
		19	2325	55.95	19 25.02	155	16.51	12.09	2.0	2.3	1.3	19	4	102	.10	1	0.9	0.6	16	INT L	
		19	2332	21.05	19 26.28	155	14.17	6.23	2.0	2.7	1.3	20	3	221	.16	3	0.8	1.0	17	INT L	
		19	2339	27.31	19 25.99	155	15.52	11.06	2.1	2.8	1.4	19	3	170	.11	3	1.1	0.6	16	INT L	
		19	2343	25.79	19 25.56	155	15.62	10.66	2.1	2.4	1.3	18	3	149	.09	3	1.0	0.5	15	INT L	
		19	2349	54.39	19 25.09	155	14.86	9.99	2.0	2.4	1.3	18	4	160	.11	1	1.0	0.6	16	INT L	
		19	2334	21.06	19 26.89	155	13.73	6.14	2.0	2.6	1.4	19	3	244	.18	4	1.0	1.6	16	INT L	
		20	0	16.82	19 25.93	155	15.54	11.17	2.1	2.7	1.4	20	3	167	.08	3	0.9	0.5	17	INT L	
		20	0	47.78	19 27.22	155	16.70	9.23	2.0	2.7	1.4	12	2	137	.21	1	2.0	0.9	5	INT L	
		20	0	31.60	19 26.37	155	14.93	8.40	2.0	2.8	1.4	21	4	215	.10	3	1.0	0.7	17	INT L	
		20	0	21.50	19 26.36	155	14.93	10.01	2.1	2.7	1.5	20	3	204	.08	3	1.0	0.7	17	INT L	
		20	0	24.39	19 26.12	155	17.74	14.06	2.3	2.2	1.5	13	4	176	.11	1	2.3	1.0	4	DEP L	
		20	0	30.31	19 24.09	155	17.64	9.48	2.2	1.4	1.9	4	83	.18	2	0.8	0.9	6	INT L		
		20	0	34.51	19 24.36	155	17.32	11.05	2.1	1.4	1.5	3	94	.10	1	1.4	0.9	3	INT L		
		20	0	38.11	19 23.51	155	17.56	8.67	2.0	1.3	1.7	4	87	.15	1	0.8	1.3	4	INT L		
		20	0	41.50	19 24.38	155	19.56	12.07	2.1	2.6	1.3	13	3	151	.16	1	1.9	0.9	6	KAO L	
		20	0	43.45	19 24.64	155	18.70	10.06	2.1	2.9	1.2	11	2	164	.10	2	1.7	1.2	1	INT L	
		20	0	48.37	19 26.50	155	14.30	6.08	2.1	2.7	1.5	2	223	.14	3	1.1	1.3	14	INT L		
20	0	51.28	19 25.15	155	17.59	5.90	1.7	2.6	1.3	15	3	81	.10	0	0.6	0.7	1	INT L			
20	0	54.28	19 24.92	155	17.85	9.63	2.0	2.3	1.2	17	3	66	.12	1	0.7	0.9	4	INT L			
20	0	57.38	19 26.12	155	17.68	8.84	1.9	2.1	1.2	13	4	91	.12	1	1.2	1.0	14	INT L			
20	1	1.86	19 23.94	155	17.62	11.32	2.1	2.5	1.4	16	6	130	.11	2	1.2	0.8	5	INT L			
20	1	4.54	19 25.83	155	16.24	9.57	2.0	2.6	1.0	10	2	241	.08	2	2.2	0.9	4	INT L			
20	1	7.29	19 25.15	155	17.95	6.79	1.8	2.6	1.1	14	2	70	.08	1	0.7	0.9	3	INT L			
20	1	9.47	19 24.87	155	18.45	6.65	1.9	2.3	1.3	11	2	97	.12	2	0.9	1.1	2	INT L			
20	1	13.27	19 26.26	155	14.75	6.22	2.0	2.3	1.5	3	206	.09	3	0.9	1.0	14	INT L				
20	1	17.65	19 25.89	155	16.49	9.27	2.0	2.7	1.8	4	125	.16	2	1.1	0.6	16	INT L				
20	1	21.52	19 25.75	155	16.38	8.50	2.1	2.6	1.9	3	126	.11	2	0.8	0.7	15	INT L				
20	1	25.97	19 25.83	155	15.38	9.61	2.1	2.6	1.8	3	171	.11	3	1.0	0.7	17	INT L				
20	1	29.88	19 26.23	155	14.99	9.16	2.1	2.6	1.3	3	198	.12	3	1.2	1.3	10	INT L				
20	1	34.25	19 27.68	155	15.02	7.24	2.0	2.6	1.2	4	246	.14	3	1.3	2.3	10	INT L				
20	1	39.05	19 26.58	155	15.78	9.87	1.9	2.3	1.3	2	179	.09	3	1.3	0.9	12	INT L				
20	1	43.44	19 26.53	155	15.84	8.19	2.1	2.7	1.7	4	160	.14	3	1.1	0.8	15	INT L				
20	1	47.32	19 26.50	155	16.41	10.08	2.1	2.4	1.3	4	143	.15	2	1.7	1.0	9	INT L				
20	1	51.24	19 25.57	155	15.30	7.58	1.9	2.3	1.1	2	164	.11	2	1.0	1.4	11	INT L				
20	1	55.18	19 25.89	155	14.85	5.70	1.7	2.2	1.0	3	199	.09	2	1.1	1.3	7	INT L				
20	1	59.05	19 25.92	155	15.81	8.85	1.9	2.1	1.1	3	154	.11	3	1.3	1.7	9	INT L				
20	1	62.48	19 25.56	155	15.63	10.60	2.2	2.4	1.1	2	148	.07	3	1.3	1.6	9	INT L				
20	1	66.40	19 25.22	155	16.97	9.26	2.1	2.6	1.3	3	96	.09	1	1.2	1.1	10	INT L				
20	2	4.03	19 25.20	155	16.64	10.65	2.0	2.7	1.6	3	103	.07	1	0.9	1.0	13	INT L				
20	2	7.98	19 25.71	155	15.96	10.68	2.0	2.4	1.3	4	141	.13	2	1.6	0.9	9	INT L				
20	2	12.76	19 25.76	155	17.26	9.74	2.1	2.1	1.8	4	96	.10	1	0.9	0.6	14	INT L				
20	2	16.28	19 25.31	155	16.79	11.08	1.9	2.4	1.5	4	103	.11	1	1.5	0.9	11	INT L				

## 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	LON W	DEPTH		AMP	DUR	CD	GAP			RMS	MIN	ERH	ERZ NO					
			HRMN	SEC			RM	MAG				MAG	NR	NS					DEG	SEC	DIS	KM	KM
1989	OCT	19	1742	54.09	19	24.77	155	16.83	11.22	1.8	1.7	1.2	21	4	90	.14	0	0.9	0.8	17	INT	L	
		19	1751	48.83	19	25.13	155	16.89	11.46	2.1	2.6	1.4	21	4	96	.12	0	0.9	0.7	17	INT	L	
		19	1756	17.36	19	24.64	155	17.84	10.35	1.8	2.1	1.1	14	3	117	.15	1	1.2	0.7	11	INT	L	
		19	1759	7.51	19	23.49	155	2.94	8.34	2.4	2.9	2.1	55	9	112	.13	3	0.4	0.3	48	SF5	L	
		19	18	2	58.88	19	25.55	155	15.59	8.04	1.9	2.4	1.5	17	4	150	.08	3	0.8	0.4	15	INT	L
		19	18	8	54.32	19	24.49	155	16.13	7.29	1.9	2.4	1.3	22	4	91	.09	1	0.5	0.5	18	INT	L
		19	1817	26.40	19	24.92	155	18.15	11.80	2.2	2.8	1.4	20	3	66	.14	1	0.8	0.8	17	INT	L	
		19	1822	51.94	19	25.61	155	16.03	9.73	2.0	2.5	1.3	20	3	135	.12	2	0.9	0.5	17	INT	L	
		19	1829	40.59	19	23.71	155	17.65	7.52	2.0	2.5	1.3	19	4	78	.12	1	0.6	0.9	17	INT	L	
		19	1835	46.88	19	25.03	155	17.62	10.96	2.1	2.8	1.3	18	3	79	.12	1	0.9	0.7	17	INT	L	
1989	OCT	19	1845	23.26	19	25.06	155	17.55	10.18	2.1	2.7	1.4	21	4	81	.13	1	0.8	0.7	17	INT	L	
		19	1858	51.76	19	25.00	155	17.01	9.72	2.1	2.7	1.4	22	5	91	.12	0	0.8	0.6	17	INT	L	
		19	19	6	38.44	19	23.93	155	18.56	9.89	2.2	2.9	1.4	19	4	52	.14	3	0.7	1.1	16	INT	L
		19	1915	3.91	19	25.88	155	16.23	8.89	2.2	2.7	1.5	20	4	135	.13	2	0.9	0.5	17	INT	L	
		19	1920	22.34	19	24.08	155	17.38	10.51	2.0	2.5	1.2	20	3	55	.11	1	0.7	0.9	17	INT	L	
		19	1926	31.40	19	25.00	155	17.87	8.47	2.1	2.6	1.3	21	4	67	.14	1	0.7	0.7	17	INT	L	
		19	1933	22.12	19	24.23	155	17.95	10.55	2.2	2.8	1.4	20	4	52	.13	2	0.8	1.0	16	INT	L	
		19	1939	48.47	19	24.82	155	17.28	10.81	1.9	2.5	1.3	19	4	67	.11	1	0.9	0.7	17	INT	L	
		19	1947	13.53	19	24.58	155	17.30	10.75	2.1	2.6	1.4	20	4	46	.11	1	0.8	0.8	17	INT	L	
		19	1954	3.81	19	24.83	155	18.73	7.58	2.4	3.5	1.5	19	4	119	.11	2	0.7	0.7	17	INT	L	
1990	OCT	19	20	1	9.62	19	25.15	155	17.53	9.00	1.8	2.1	1.2	16	4	82	.14	0	1.1	0.6	12	INT	L
		19	20	4	11.67	19	26.72	155	14.93	9.66	1.7	2.1	1.2	17	4	214	.13	4	1.3	0.8	15	INT	L
		19	2010	41.13	19	26.27	155	15.62	9.60	2.1	2.4	1.4	20	2	160	.10	3	0.8	0.6	18	INT	L	
		19	2016	10.87	19	23.82	155	16.51	10.17	2.1	2.6	1.4	22	4	69	.16	0	0.8	0.7	18	INT	L	
		19	2021	3.06	19	24.60	155	16.73	9.50	2.1	2.6	1.3	20	4	87	.11	1	0.7	0.6	17	INT	L	
		19	2026	0.33	19	23.60	155	16.98	9.82	2.1	2.6	1.3	17	2	50	.10	0	0.8	1.0	16	INT	L	
		19	2030	43.56	19	25.54	155	15.91	10.19	2.0	2.4	1.3	20	4	137	.12	2	1.0	0.6	16	INT	L	
		19	2037	6.35	19	24.59	155	16.42	11.26	2.1	2.7	1.4	21	4	91	.11	1	0.8	0.7	17	INT	L	
		19	2043	31.49	19	25.65	155	14.82	8.09	2.1	2.5	1.3	20	3	190	.10	2	0.9	0.7	17	INT	L	
		19	2049	24.91	19	24.59	155	16.17	11.90	2.1	2.6	1.4	20	4	95	.11	1	0.9	0.5	17	INT	L	
1990	OCT	19	2056	28.58	19	26.28	155	14.59	8.89	2.1	2.7	1.4	22	5	211	.13	3	1.0	0.7	17	INT	L	
		19	21	4	28.84	19	24.80	155	16.91	11.68	2.3	2.8	1.5	22	4	88	.12	0	0.8	0.6	18	INT	L
		19	21	9	57.82	19	22.98	155	18.39	9.74	2.0	2.6	1.3	19	4	58	.12	3	0.6	1.2	16	INT	L
		19	2119	51.35	19	24.98	155	16.28	10.97	2.1	2.8	1.5	20	3	106	.15	1	1.0	0.7	17	INT	L	
		19	2129	52.60	19	25.41	155	16.07	11.54	2.1	2.6	1.3	20	4	127	.09	2	0.9	0.5	17	INT	L	
		19	2137	56.35	19	25.84	155	15.50	8.57	1.9	2.3	1.2	18	3	165	.15	3	1.0	0.8	17	INT	L	
		19	2145	17.46	19	25.78	155	14.65	8.75	2.1	2.5	1.4	22	5	198	.13	2	1.0	0.7	17	INT	L	
		19	2153	58.60	19	24.86	155	16.62	12.18	2.1	2.4	1.3	21	4	95	.10	1	0.9	0.7	17	INT	L	
		19	22	40.39	19	24.62	155	16.30	12.00	2.2	2.5	1.4	22	4	94	.13	1	0.9	0.6	18	INT	L	
		19	2214	23.46	19	26.38	155	12.43	8.90	2.0	2.1	1.5	19	4	285	.10	8	1.3	1.0	16	GIN	L	
1990	OCT	19	2229	12.04	19	23.82	155	17.15	11.78	2.2	2.8	1.5	21	5	65	.08	1	0.8	0.7	17	INT	L	
		19	2233	11.31	19	25.87	155	15.71	11.15	2.0	2.0	1.1	16	3	167	.11	3	1.1	0.7	13	INT	L	
		19	2241	24.35	19	25.68	155	15.72	11.15	2.2	2.8	1.4	19	3	150	.12	3	1.1	0.6	17	INT	L	
		19	2250	26.55	19	25.43	155	17.34	11.95	2.2	2.9	1.4	17	3	105	.09	0	1.0	0.7	16	INT	L	
		19	2258	6.41	19	25.12	155	16.50	12.96	2.2	2.7	1.5	21	3	105	.12	1	0.9	0.6	18	INT	L	
		19	2306	11.31	19	25.87	155	15.71	11.15	2.0	2.0	1.1	16	3	167	.11	3	1.1	0.7	13	INT	L	
		19	2314	24.35	19	25.68	155	15.72	11.15	2.2	2.8	1.4	19	3	150	.12	3	1.1	0.6	17	INT	L	
		19	2322	26.55	19	25.43	155	17.34	11.95	2.2	2.9	1.4	17	3	105	.09	0	1.0	0.7	16	INT	L	
		19	2330	6.41	19	25.12	155	16.50	12.96	2.2	2.7	1.5	21	3	105	.12	1	0.9	0.6	18	INT	L	
		19	2338	11.31	19	25.87	155	15.71	11.15	2.0	2.0	1.1	16	3	167	.11	3	1.1	0.7	13	INT	L	

ORIGIN TIME		LAT N		LON W		DEPTH AMP		CD		GAP		RMS		MIN		ERH		ERZ		NO			
YEAR	MON	DA	HRMN	SEC	DEG MIN	DEG MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	KN	FM	RMK					
1989	OCT	20	216	58.54	19	26.66	155	16.41	10.83	2.1	2.6	15	4	147	11	2	1.5	0.7	11	INT	L		
		20	220	49.95	19	24.09	155	17.56	11.51	2.2	2.4	19	4	79	12	2	0.8	0.9	15	INT	L		
		20	222	55.66	19	22.71	155	30.38	11.56	2.2	2.4	42	1	42	11	5	0.4	0.4	41	KAO			
		20	224	19.43	19	25.90	155	16.86	10.68	2.0	2.0	14	3	130	11	2	1.5	0.9	11	INT	L		
		20	230	9.67	19	23.26	155	16.66	4.17	1.9	2.1	18	4	79	11	1	0.4	0.6	16	SSC	L		
		20	232	51.36	19	25.93	155	15.74	8.67	1.9	2.2	14	4	149	07	3	0.9	0.8	11	INT	L		
		20	236	0.49	19	22.31	155	14.67	6.19	1.9	2.1	11	2	268	16	2	1.3	1.8	9	INT	L		
		20	237	34.85	19	25.25	155	16.54	11.82	2.1	2.4	17	2	107	08	1	0.9	0.6	16	INT	L		
		20	244	44.00	19	25.90	155	16.16	10.08	1.9	2.6	13	4	139	11	2	1.2	0.8	10	INT	L		
		20	249	7.07	19	26.40	155	15.67	9.41	2.1	2.8	20	4	162	11	3	0.9	0.7	16	INT	L		
		20	251	43.78	19	25.16	155	15.14	7.99	2.0	2.7	19	3	151	13	2	0.9	0.6	17	INT	L		
		20	254	33.76	19	25.62	155	17.16	10.81	2.0	2.4	14	4	129	10	1	1.4	0.7	10	INT	L		
		20	259	23.56	19	25.64	155	16.12	10.55	2.0		19	4	132	09	2	0.9	0.6	15	INT	L		
		20	3	0	26.80	19	22.46	155	30.51	11.29	1.2	25	1	36	12	5	0.4	0.7	25	KAO			
		20	3	1	45.02	19	25.67	155	15.52	10.11	1.9	12	3	158	09	3	1.4	0.9	9	INT	L		
		20	3	2	33.88	19	27.31	155	14.96	3.78	2.0	2.5	18	4	210	18	3	0.8	1.3	15	SNC	L	
		20	3	4	50.36	19	26.25	155	16.62	5.05	1.8	2.2	15	2	125	13	2	0.7	0.9	14	INT	L	
		20	3	7	45.16	19	25.62	155	16.54	10.73	2.0	2.1	13	4	117	07	2	1.4	0.8	9	INT	L	
		20	313	2.46	19	27.08	155	16.28	10.50	1.8	1.7	12	3	170	12	1	1.6	0.9	9	INT	L		
		20	315	48.23	19	26.89	155	14.86	3.92	1.7		12	4	229	11	4	0.6	1.3	9	SNC	L		
		20	418	45.74	19	26.91	155	28.66	10.78	2.1	1.6	41	5	44	12	7	0.3	0.6	36	KAO			
		20	457	58.87	19	21.28	155	24.69	14.06	1.9	1.6	36	3	46	11	3	0.4	0.4	33	DEP			
		20	1454	45.45	19	25.35	155	15.87	15.57	1.9	1.4	1.2	20	3	131	12	2	1.2	0.8	17	DEP	L	
		20	16	6	50.09	19	24.27	155	16.28	12.34	2.0	1.6	1.4	21	4	83	10	1	0.8	0.7	17	INT	L
		20	2041	9.26	19	24.46	155	16.72	11.41	1.9	1.5	1.2	23	4	84	12	1	0.8	0.5	19	INT	L	
		20	2248	26.92	19	24.98	155	16.53	14.22	1.9	1.6	1.4	20	4	100	11	1	1.0	0.7	19	DEP	L	
		20	2315	49.19	19	24.91	155	16.05	2.27	1.6	1.4	1.3	23	6	108	11	2	0.3	0.2	17	SNC		
		20	135	8.27	19	25.06	155	16.18	12.97	2.1	1.5	1.4	21	2	111	09	1	0.8	0.6	20	INT	L	
		21	224	49.31	19	17.56	155	27.55	10.53	2.9	3.1	3.0	55	7	49	14	6	0.3	0.4	51	LSW		
		21	343	22.28	19	26.48	155	15.01	10.15	1.9	1.4	1.4	22	4	182	13	4	1.0	0.8	18	INT	L	
		21	622	3.85	19	23.70	155	17.01	13.64	2.1	1.6	1.4	25	2	52	15	1	0.8	0.6	24	DEP	L	
		21	737	52.87	19	26.30	155	15.59	0.03	2.1	2.0	1.7	29	5	145	17	3	0.3	0.6	24	SNC	*	
		21	828	13.18	19	17.98	155	30.77	9.18	2.4	2.7	2.2	54	6	43	14	5	0.3	0.5	48	LSW		
		21	1351	27.88	19	19.45	155	15.52	7.21	0.9	1.4	1.5	36	4	97	13	3	0.4	0.5	34	SF1		
		21	1423	49.24	19	20.51	155	6.07	8.48	0.8	1.3	1.5	29	3	109	13	6	0.6	0.7	26	SF4		
		21	1732	39.36	19	22.84	155	3.57	8.56	1.7	1.7	1.8	44	5	105	14	3	0.4	0.3	40	SF5		
		21	1829	6.70	19	24.54	155	16.11	15.31	1.3	1.2	33	3	67	10	1	0.6	0.3	30	DEP			
		21	2356	33.34	19	22.39	155	21.59	28.65	1.8	1.6	41	4	49	14	4	0.6	0.7	40	DML			
		22	6	5	4.62	19	23.94	155	26.72	10.66	1.2	1.2	34	4	35	11	3	0.4	0.5	31	KAO		
		22	813	40.77	19	19.25	155	9.41	7.23	1.5	1.7	1.7	35	2	96	10	4	0.4	0.7	23	SF3		
		22	1349	29.72	19	21.96	155	28.82	10.01	2.3	2.7	2.2	52	8	37	11	2	0.3	0.6	36	KAO		
		22	1622	18.97	19	22.12	155	5.50	5.57	0.8	1.2	1.3	24	1	74	14	4	0.5	1.4	16	SF4		
		22	1836	36.44	19	19.87	155	12.52	6.98	1.7	1.7	1.5	35	5	78	11	5	0.4	0.7	22	SF2		
		22	1931	5.21	19	19.15	155	13.63	8.42	1.7	1.9	1.7	42	4	67	11	4	0.4	0.6	25	SF2		
22	1944	39.60	19	21.93	155	12.69	3.22	1.6	1.5	1.4	25	3	56	04	1	0.3	0.2	14	SER				

ORIGIN TIME		LAT N		LON W		DEPTH		AMP		DUR		CD		GAP		RMS		MIN		ERH		ERZ		NO	
YEAR	MON	DA	HRMN	SEC	DEG	MIN	DEG	MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	KH	FM	RMK					
1989	OCT	23	140	45.93	19	20.25	155	7.34	8.27	2.2	2.6	2.1	50	10	98	12	5	0.3	0.3	48	SF4				
		23	328	37.00	20	0.86	155	25.76	9.28	2.2	1.6	1.8	27	5	215	12	17	0.8	0.6	24	KEA				
		23	339	13.30	19	49.18	156	29.53	46.00		2.6	2.0	1.7	2	314	15	70	3.2	3.8	15	DIS				
		23	843	37.85	19	18.21	155	13.32	7.33	1.8	2.0	1.8	39	3	88	12	2	0.4	0.7	30	SF2				
		23	1147	24.12	19	23.31	155	27.91	4.20	1.5	1.2	1.0	13	2	94	11	2	0.6	0.5	9	KAO				
23	1457	1.36	19	18.42	155	13.23	6.72	1.4	2.0	1.6	38	3	88	11	3	0.4	0.8	24	SF2						
23	1537	8.34	19	23.30	155	27.07	6.10	2.2	2.0	1.7	32	4	82	11	5	0.3	1.1	22	KAO						
23	2253	2.91	19	18.33	155	12.95	6.65	1.5	1.5	1.3	30	7	100	13	3	0.4	0.7	27	SF2						
24	024	34.89	19	18.99	155	10.35	4.01	1.1	1.4	28	5	112	12	5	0.3	1.3	29	SSF							
24	033	34.08	19	56.75	155	31.60	33.87	3.3	3.5	2.8	62	10	159	13	17	0.6	0.6	53	KEA						
24	552	46.53	19	20.13	155	8.33	6.38	1.2	1.2	34	5	80	16	4	0.4	0.8	29	SF4							
24	653	58.02	19	24.44	155	16.52	1.04	1.8	1.9	1.3	24	7	85	12	1	0.2	0.2	17	SSC	L					
24	1535	8.97	19	22.87	155	30.62	9.68	1.4	1.3	26	2	49	09	5	0.4	0.7	19	KAO							
24	1956	40.60	19	20.36	155	11.68	8.71	1.8	1.7	1.7	28	3	193	09	5	0.8	0.6	19	SF3						
24	23	7	36.46	19	23.66	155	16.69	3.18	2.3	2.8	2.6	40	5	42	11	0	0.3	0.2	36	SSC					
25	0	2	30.72	19	19.28	155	8.41	5.32	1.6	1.3	1.4	30	5	205	15	6	0.8	2.2	26	SF4					
25	531	26.87	19	21.19	155	11.94	8.67	1.7	1.7	1.6	34	4	161	12	3	0.7	0.5	32	SF3						
25	1412	16.80	19	24.73	155	13.65	36.58	2.2	2.5	1.6	25	4	209	08	4	1.3	1.1	9	DEP	L					
26	433	29.30	19	27.17	154	49.60	9.76	2.5	2.6	2.2	37	1	256	11	3	1.2	0.4	38	SER						
26	1025	17.69	19	19.88	155	11.34	8.27	2.0	2.2	1.9	34	4	88	11	5	0.5	0.7	34	SF3						
26	2044	28.37	19	24.06	155	26.92	10.36	2.0	1.9	1.7	44	4	26	12	3	0.3	0.5	35	KAO						
27	1357	38.29	19	22.49	155	29.91	9.67	2.7	3.2	2.7	52	5	32	12	4	0.3	0.5	40	KAO						
27	1434	25.61	19	19.79	155	8.71	7.57	1.6	1.2	1.4	26	3	76	07	5	0.4	0.8	24	SF4						
28	148	32.31	20	21.31	155	56.88	39.98	2.7	2.0	2.0	30	4	317	09	31	1.3	0.4	32	KOH						
28	853	20.09	19	44.84	155	1.70	29.35	2.4	2.0	1.9	49	5	252	11	5	1.2	1.5	46	HIL						
28	1053	23.33	19	26.16	155	19.41	4.96	1.8	1.1	1.0	25	6	97	11	3	0.4	0.8	19	KAO						
28	1053	59.85	19	26.04	155	19.54	5.04	2.2	2.1	1.4	25	4	92	12	4	0.4	1.0	21	KAO						
28	1319	31.56	19	27.19	154	53.26	5.66	2.0	1.6	1.6	21	2	159	11	4	0.7	1.2	19	SER						
28	1517	52.04	20	3	154	47.93	18.58	2.4	2.2	1.7	25	6	188	14	9	1.3	1.6	20	KOH						
28	1523	33.03	19	20.85	155	6.72	8.20	2.5	3.2	2.7	50	8	95	11	5	0.4	0.6	42	SF4						
28	17	49.08	19	21.83	155	4.81	8.31	1.2	1.4	26	6	77	12	5	0.5	0.8	20	SF5							
28	2243	0.30	19	11.32	155	27.96	3.93	1.8	1.5	1.5	27	0	105	15	3	0.6	1.9	19	LSW						
29	1029	42.11	19	58.55	155	19.14	7.20	1.7	1.7	1.6	35	3	129	13	4	0.5	0.7	19	SF5						
28	2353	39.48	19	27.98	155	5.40	38.43	2.4	2.8	2.4	62	13	58	12	5	0.5	0.7	40	DEP						
29	051	57.48	19	20.66	155	7.60	5.69	1.6	1.1	1.4	23	1	87	13	5	0.5	1.2	11	SF4						
29	248	32.17	19	21.76	155	12.06	2.85	1.3	1.1	1.0	15	2	116	06	2	0.6	0.4	8	SER						
29	625	8.93	19	33.58	156	3.47	9.07	2.4	1.6	1.4	17	0	269	11	17	3.1	0.7	7	KON						
29	1029	42.11	19	58.55	155	19.14	9.39	2.2	2.0	1.7	20	1	209	09	10	1.1	0.6	13	KEA						
29	1122	47.11	19	22.74	155	26.69	10.42	2.6	2.9	2.6	55	10	3	11	2	0.3	0.4	41	KAO						
29	1224	6.97	19	20.20	155	6.12	8.10	0.9	1.4	1.4	14	0	117	05	6	0.7	1.9	12	SF4						
29	1244	26.30	19	15.18	155	18.27	48.39	2.1	3.1	1.3	19	4	171	10	5	1.7	0.9	15	DEP	L					
29	1412	20.46	19	19.72	155	7.83	8.15	1.6	1.6	1.4	33	3	96	11	4	0.4	0.7	30	SF4						
29	1935	36.69	19	24.98	155	15.78	8.72	1.8	2.1	1.2	21	4	118	14	2	0.9	0.5	17	INT	L					
29	2319	41.18	19	57.46	155	20.80	9.35	2.1	1.6	1.5	21	3	208	11	8	0.9	0.4	21	KEA						
29	2329	4.68	19	55.03	155	56.14	39.04	2.5	2.1	1.7	33	5	217	15	27	1.2	0.8	29	KOH						

## 1989 HVO EARTHQUAKE SUMMARY LIST

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YEAR	MON	DA	HRMN	SEC	LAT N	DEG MIN	DEG MIN	DEPTH	AMP	DUR	CD	MAG	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	RMS	MIN	ERH	ERZ	NO
1989	OCT	30	2	3	50.63	19	23.67	155	17.90	8.06	2.0	2.4	1.3	21	4	49	13	2	0.5	0.8	18	INT	L		
		30	416	31.11	19	24.87	155	18.00	12.42	2.1	2.4	1.4	19	4	81	10	1	0.8	0.7	17	INT	L			
		30	441	57.17	19	27.11	155	14.04	6.72	1.7	1.7	1.1	15	4	242	14	5	0.9	1.2	11	INT	L			
		30	5	6	2.17	19	24.36	155	17.97	11.18	1.9	1.9	1.0	19	3	56	12	2	0.8	0.9	16	INT	L		
		30	611	7.16	19	23.16	155	18.21	9.78	2.0	2.1	1.2	20	3	57	14	2	0.6	1.0	18	INT	L			
		30	647	26.26	19	24.26	155	16.79	8.05	2.1	2.2	1.3	19	2	78	12	1	0.6	0.6	17	INT	L			
		30	735	55.61	19	26.53	155	15.32	7.34	1.8	2.0	1.1	19	7	196	09	3	0.6	0.9	13	INT	L			
		30	8	48	68	19	19.16	155	7.46	3.75	1.6	1.7	1.6	32	6	115	12	3	0.4	1.1	30	SSF			
		30	825	35.72	19	25.80	155	15.58	7.65	1.9	2.2	1.2	20	8	160	09	3	0.6	0.8	13	INT	L			
		30	939	16.55	19	28.18	155	26.96	8.34	2.6	2.4	2.0	47	7	49	12	6	0.3	0.7	43	KAO				
		30	956	37.32	19	26.00	155	17.11	5.88	1.8	2.2	1.2	12	1	180	12	1	1.0	1.3	1	INT	L			
		30	1152	7.98	19	25.59	155	16.88	8.46	2.1	2.6	1.6	13	0	106	15	1	1.0	2.2	1	INT	L			
30	1235	2.86	19	24.49	155	18.13	14.06	2.1	2.3	1.3	12	4	189	26	2	5.0	1.5	2	DEP	L					
30	1242	14.81	19	27.68	155	17.40	15.06	2.2	2.4	1.4	6	1	267	02	1	3.1	1.2	2	DEP	L					
30	13	6	55.70	19	27.19	155	17.15	7.32	1.8	2.1	1.3	10	4	248	15	3	1.3	0.9	1	INT	L				
30	1335	10.70	19	26.29	155	15.01	6.78	1.7	1.7	1.2	12	5	199	09	3	0.9	1.4	1	INT	L					
30	1535	15.91	19	24.36	155	17.57	6.72	1.9	2.2	1.2	15	2	75	15	1	0.9	1.3	1	INT	L					
30	1636	28.95	19	25.77	155	18.07	5.10	1.4	1.7	1.1	10	1	160	08	1	0.9	0.9	1	INT	L					
30	19	9	43.31	19	20.05	155	11.53	7.34	1.8	1.8	1.8	41	1	84	14	5	0.5	0.8	33	SP3					
30	2353	59.25	19	57.46	155	20.37	9.75	2.1	1.8	1.6	26	3	217	10	8	0.8	0.3	24	KEA						
31	122	56.26	19	20.82	155	51.64	8.63	2.1	1.3	1.7	39	4	152	19	9	0.6	0.6	35	KON						
31	418	39.13	19	20.06	155	7.71	7.94	1.6	1.9	1.6	41	3	94	13	5	0.5	0.4	43	SP4						
31	8	6	59.95	19	27.03	155	13.94	2.70	1.4	1.9	1.0	14	1	242	11	4	0.8	1.0	13	GIN	L				
31	1030	9.50	19	54.94	155	19.78	9.32	2.3	2.2	1.8	20	2	284	11	3	0.9	0.5	15	KEA	L					
31	1713	44.29	19	19.07	155	8.50	9.16	1.4	1.4	2.3	2	84	05	3	0.9	1.5	16	SP4							
31	1949	7.45	19	32.94	155	37.16	10.33	2.7	2.8	2.3	50	7	72	13	4	0.3	0.4	36	MLO						
31	1959	54.11	19	32.17	155	57.86	9.69	2.4	2.2	2.0	28	4	240	16	7	1.0	0.6	11	KON	F					
31	2139	25.02	19	25.45	155	38.57	6.60	1.9	2.0	1.2	14	4	186	14	5	0.8	1.1	12	MLO						
31	2211	47.77	18	58.89	155	25.54	32.72	2.1	1.8	1.8	45	3	226	12	20	1.2	0.9	44	DLS						
31	2236	25.29	19	24.95	155	16.22	9.68	1.7	2.3	1.1	19	2	106	11	1	0.8	0.6	17	INT	L					
31	23	7	42.82	19	19.93	155	12.85	8.60	1.9	2.0	1.8	54	8	73	11	5	0.4	0.3	47	SP2					
NOV	NOV	1	145	17.13	19	35.03	155	58.23	3.84	2.4	2.3	2.0	39	4	247	24	12	1.1	1.8	39	KON				
		1	519	15.34	19	25.62	155	14.73	3.99	1.7	1.2	1.9	2	167	15	2	0.6	0.8	17	SNC	L				
		1	950	11.54	19	19.69	155	6.77	7.21	1.6	1.7	1.6	41	5	120	13	5	0.4	0.6	38	SP4				
		1	16	1	24.01	19	23.35	155	16.38	14.18	2.0	1.8	1.2	16	4	77	28	1	2.1	1.8	1	DEP	L		
		1	1919	25.71	19	24.20	155	16.51	10.16	1.7	2.1	1.2	7	0	109	02	1	1.6	5.8	0	INT	L			
		1	1933	19.72	19	20.18	155	6.76	8.46	2.2	2.7	2.5	48	2	108	11	6	0.4	0.5	38	SP4				
		1	2349	15.45	19	25.44	155	16.59	9.94	1.9	1.3	20	3	110	12	1	0.9	0.6	17	INT	L				
		2	024	40.64	19	14.55	155	4.93	43.09	2.1	1.7	1.9	52	5	212	12	7	1.3	0.6	48	DEP				
		2	2	3	59.89	19	17.34	155	29.38	10.28	2.9	3.5	3.0	51	3	54	14	4	0.4	0.4	50	LSW	F		
		2	3	30.88	19	24.83	155	16.73	7.38	2.0	1.3	19	3	92	12	0	0.6	0.5	16	INT	L				
		2	3	12.37	19	25.00	155	17.07	11.00	2.1	1.2	18	4	89	10	0	0.8	0.5	15	INT	L				
		2	420	5.59	19	20.78	155	12.57	7.97	1.8	2.1	1.8	47	4	137	14	4	0.5	0.4	47	SP2				
2	5	3	46.19	25.58	155	15.11	8.99	1.9	1.3	18	3	173	11	2	0.9	0.7	15	INT	L						
2	514	31.63	19	25.24	155	14.84	7.05	1.6	1.7	1.1	18	4	173	15	1	1.0	0.8	14	INT	L					

## 1989 HVO EARTHQUAKE SUMMARY LIST

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ORIGIN TIME	LAT N	DEG MIN	DEG MIN	DEPT W	DEPTH	AMP	DUR	CD	GAP	RMS	MIN	ERH	ERZ	NO															
YEAR	MON	DA	HRMN	SEC	DEG MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	RM	FM	RMK												
1989	NOV	2	516	6.16	19	25.41	155	15.89	9.03	1.5	1.6	1.0	17	3	133	11	2	0.8	0.4	15	INT	L							
		2	529	16.66	19	25.91	155	15.11	10.10	1.9	1.2	1.8	3	187	13	3	1.1	0.7	15	INT	L								
		2	554	20.01	19	21.04	155	6.91	9.17	3.3	3.5	55	7	89	12	4	0.5	0.4	50	SP4									
		2	555	42.97	19	20.39	155	6.60	7.01	2.4	2.9	2.5	47	4	106	13	6	0.4	0.6	44	SP4	F							
		2	639	55.55	19	24.78	155	16.18	11.63	2.1	2.1	1.2	18	3	101	12	1	0.8	0.6	16	INT	L							
		2	1029	31.81	19	19.81	155	7.15	6.63	1.9	1.9	1.8	45	8	109	10	5	0.3	0.6	41	SP4								
		2	2136	0.10	19	26.47	155	30.09	9.81	2.1	1.8	1.6	46	5	40	12	9	0.3	0.5	43	KAO								
		3	020	49.93	19	23.12	155	14.61	3.24	1.9	1.5	1.4	32	6	48	11	3	0.3	0.3	26	SEC								
		3	451	56.44	19	25.42	155	16.51	12.05	1.7	2.2	1.4	23	3	68	12	1	0.6	0.6	21	INT	L							
		3	554	4.46	19	11.25	155	26.85	7.87	2.1	1.7	1.8	42	4	138	14	4	0.4	0.4	39	LSW								
		3	7	1	11.96	19	22.27	155	2.58	9.05	2.8	3.0	59	6	124	11	4	0.5	0.3	53	SP5								
		3	1931	27.78	19	20.06	155	6.51	4.89	1.4	1.2	1.6	42	10	115	14	6	0.3	1.5	37	SSF								
		3	22	9	8.18	19	59.96	155	26.62	8.22	3.0	3.0	52	8	196	12	16	0.4	0.6	49	KEA								
		4	856	40.31	19	47.54	156	17.01	35.88	3.2	2.6	2.4	48	7	270	15	48	1.1	1.5	43	HUA								
		4	2121	19.47	19	22.25	155	2.44	5.93	0.8	1.1	1.5	33	7	136	20	4	0.5	0.9	26	SP5								
		5	1012	29.00	19	19.65	155	8.58	7.62	2.0	2.3	2.0	44	5	78	11	4	0.4	0.6	34	SP4								
		5	1432	21.57	19	13.40	155	29.98	12.40	1.8	1.3	1.5	23	2	125	07	3	0.4	0.5	14	LSW								
		5	1639	34.26	19	20.75	155	12.98	8.31	1.9	2.0	1.7	40	5	63	11	3	0.4	0.5	33	FS2								
		5	19	36.06	19	16.19	155	27.80	7.65	1.4	1.6	1.6	32	1	64	14	5	0.4	0.9	17	LSW								
		6	2	9	45.95	19	20.15	155	11.91	6.77	1.7	1.7	1.7	47	7	80	12	5	0.3	0.4	41	SP3							
		6	520	32.96	19	18.53	155	13.31	8.17	1.8	1.9	1.8	47	6	83	11	3	0.4	0.4	45	SP2								
		6	1246	46.30	19	23.26	155	0.03	6.22	1.8	1.6	1.7	27	3	167	19	4	0.8	1.4	17	SP5								
		6	16	0	29.19	19	21.42	155	4.90	7.29	2.3	2.8	2.5	46	4	87	12	4	0.4	0.7	35	SP5							
		6	1953	35.01	19	19.53	155	9.71	7.30	2.0	2.2	2.1	45	4	93	11	5	0.4	0.6	28	SP3								
		7	856	9.95	20	0.19	155	26.34	8.65	2.2	2.1	2.1	19	2	198	09	16	1.0	0.7	14	KEA								
		7	12	1	46.85	19	20.16	155	6.76	8.48	2.2	1.9	1.9	35	3	108	09	6	0.4	0.6	20	SP4							
		7	1542	19.12	19	19.68	155	7.47	7.66	1.7	1.5	2.1	1	105	09	4	0.6	1.2	16	SP4									
		7	1816	41.56	19	24.21	155	1.51	7.11	2.0	2.3	1.7	29	3	127	14	5	0.5	0.8	18	SP5								
		7	2039	27.64	19	19.90	155	8.08	8.29	1.6	1.6	1.5	24	2	88	08	5	0.5	0.9	22	SP4								
		9	1352	58.37	19	9.29	155	38.03	5.56	1.4	1.4	26	3	107	13	11	0.5	2.2	24	LSW									
		9	1525	24.67	19	18.97	155	11.49	4.56	1.5	1.3	1.4	36	4	49	12	6	0.4	0.5	34	KAO								
		9	920	58.74	19	28.41	155	36.45	13.81	2.2	1.5	1.3	31	4	64	17	2	0.7	0.4	27	DML	L							
		9	925	0.22	19	28.27	155	36.72	11.58	2.3	2.4	1.2	24	2	96	13	2	0.6	0.6	22	MLO	L							
		9	948	19.48	19	28.09	155	36.42	11.15	2.3	0.9	1.7	3	205	12	2	1.6	0.9	14	MLO	L								
		9	1030	14.67	19	26.22	155	19.40	5.88	2.0	1.3	1.2	20	4	148	11	3	0.6	1.0	16	KAO								
		9	1523	57.00	19	20.86	155	6.97	8.18	2.6	2.7	2.8	50	5	91	10	5	0.4	0.5	38	SP4								
		9	1526	27.15	19	20.97	155	6.93	7.13	2.1	2.4	2.2	41	0	90	12	5	0.4	0.8	34	SP4								
		9	16	2	17.66	19	59.82	155	28.18	36.26	1.9	1.6	30	4	197	12	18	0.9	1.2	19	KEA								
		9	1855	47.79	19	32.63	155	37.62	12.26	1.9	1.3	1.4	24	0	119	13	5	0.6	0.9	18	MLO								
		9	1950	15.96	19	20.86	155	6.21	7.57	0.8	1.3	1.5	32	0	99	10	3	0.5	0.5	37	SP5								
10	1426	3.52	19	23.09	155	3.44	8.69	1.4	1.2	1.7	41	5	106	12	3	0.4	0.3	37	SP5										





# 1989 HVO EARTHQUAKE SUMMARY LIST

ORIGIN TIME			LAT N		LON W		DEPTH AMP DUR CD				GAP RMS MIN ERH				ERZ NO							
YEAR	MON	DA	HR	MIN	SEC	DEG	MIN	DEG	MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	RN	FM	RMK	
1989	NOV	25	420	53.85	19	18.48	155	15.15	8.45	2.6	2.9	2.7	52	7	102	.14	4	0.4	0.3	48	SF1	
		25	5	29.04	19	24.70	155	0.84	6.89	2.1	2.4	1.9	48	10	126	.12	4	0.3	0.40	40	SF5	
		25	530	38.46	19	26.31	155	15.05	8.52	1.8	2.1	1.2	20	9	199	.12	3	0.8	0.8	11	INT L	
		25	649	28.46	19	24.88	155	1.01	4.85	1.2	1.5	2.5	5	117	.13	4	0.4	1.9	20	SME		
		25	749	39.56	19	26.63	155	14.43	10.96	2.7	3.1	1.8	18	8	238	.16	4	1.2	0.6	11	INT L	
		25	950	54.38	19	28.77	155	13.20	7.65	2.6	3.2	2.2	22	10	278	.10	6	0.8	1.4	12	GLN L	
		25	1222	54.95	19	28.40	155	14.09	5.29	2.5	3.1	1.9	17	7	250	.14	5	0.8	2.5	12	GLN L	
		25	1257	26.31	19	27.20	155	15.03	10.23	1.4	2.4	1.6	23	10	227	.16	3	1.1	0.7	13	INT L	
		25	14	5	46.97	19	20.14	155	11.78	7.23	1.3	1.9	1.8	41	4	81	.12	5	0.4	0.5	37	SF3
		25	1431	34.19	19	28.32	155	14.46	8.15	2.3	3.2	1.9	20	7	246	.14	4	0.9	1.1	12	GLN L	
		25	1711	30.58	19	27.74	155	13.39	6.59	2.2	3.0	1.9	20	7	253	.11	6	0.7	1.5	13	GLN L	
		25	1849	42.89	19	26.39	155	15.51	12.21	1.7	1.9	1.7	23	10	184	.14	3	1.1	0.7	13	INT L	
		25	2046	48.75	19	28.99	155	14.85	7.11	2.3	2.9	1.9	20	8	269	.23	4	1.2	2.0	10	GLN L	
		25	22	6	47.64	19	18.83	155	14.68	8.60	1.4	1.2	3.1	17	3	96	.10	4	0.6	0.7	14	SF1
		25	2210	48.09	19	23.70	155	17.14	10.54	1.7	1.5	1.8	2	62	.15	1	0.8	1.1	16	INT L		
		25	2311	33.08	19	18.89	155	13.61	9.16	3.7	3.8	4.0	53	8	69	.11	3	0.3	0.3	50	SF2 F	
		25	2338	30.30	19	25.45	155	17.05	10.78	1.4	2.4	1.1	16	3	98	.14	1	1.4	0.7	13	INT L	
		25	2350	38.23	19	22.96	155	3.29	9.56	1.6	1.9	1.9	51	8	110	.12	3	0.4	0.3	44	SF5 L	
		26	045	50.51	19	26.96	155	15.94	9.36	2.4	3.0	1.9	19	9	186	.14	2	1.0	0.7	11	INT L	
		26	051	34.61	19	28.51	155	13.30	4.96	1.4	1.8	1.3	19	7	275	.19	6	1.0	4.8	11	GLN L	
		26	144	42.20	19	27.95	155	13.80	9.24	2.2	2.6	1.8	20	7	250	.11	5	1.1	0.9	11	GLN L	
		26	223	8.64	19	25.98	155	19.53	6.56	1.8	1.3	3.1	6	75	.11	4	0.4	0.6	22	KAO		
		26	257	50.41	19	26.08	155	16.21	11.32	1.8	1.1	2.1	8	142	.11	3	1.0	0.7	13	INT L		
		26	401	18.17	19	24.61	155	16.70	9.52	2.3	2.6	1.8	17	3	88	.13	1	0.7	0.7	15	INT L	
		26	625	14.81	19	28.21	155	13.40	3.67	2.0	1.9	1.6	23	10	257	.18	6	0.7	1.7	13	GLN L	
	26	833	57.55	19	24.14	155	17.93	11.44	2.5	1.7	22	2	50	.13	2	0.5	0.6	21	INT L			
	26	834	47.43	19	25.57	155	16.64	9.25	2.1	2.9	1.6	19	2	66	.14	1	0.8	0.8	18	INT L		
	26	958	31.72	19	20.94	155	4.63	5.78	1.3	2.2	1.6	41	2	100	.15	4	0.5	0.9	42	SF5 L		
	26	1026	29.98	19	23.81	155	16.41	7.68	1.6	2.9	1.2	17	3	69	.12	0	0.7	0.9	16	INT L		
	26	1230	26.91	19	24.64	155	16.32	9.49	2.3	3.2	1.8	21	3	65	.11	1	0.5	0.9	19	INT L		
	26	1231	13.59	19	24.53	155	16.24	10.07	1.4	2.4	1.4	19	2	92	.12	1	0.7	0.7	17	INT L		
	26	1337	47.57	19	25.23	155	16.43	8.62	2.0	3.0	1.5	19	3	110	.12	1	0.8	0.5	15	INT L		
	26	1516	24.88	19	24.59	155	16.01	5.74	1.7	2.7	1.5	19	3	101	.12	2	0.5	0.6	17	INT L		
	26	1647	44.67	19	25.27	155	16.30	8.80	2.1	2.8	1.6	18	3	115	.09	1	0.8	0.6	17	INT L		
	26	1724	0.63	19	22.98	155	4.08	7.84	0.8	1.2	1.4	31	4	94	.17	3	0.5	0.6	26	SF5		
	26	1732	21.01	19	25.95	155	14.35	8.21	2.1	2.8	1.6	19	3	210	.12	2	1.1	0.9	16	INT L		
	26	1920	15.83	19	24.45	155	16.63	8.37	2.1	2.7	1.5	18	3	84	.11	1	0.7	0.6	16	INT L		
	26	2017	56.16	19	23.21	155	17.15	7.54	2.1	2.6	1.3	17	3	64	.09	0	0.6	0.9	16	INT L		
	26	2217	54.53	19	24.49	155	17.23	6.68	1.4	2.5	1.3	18	2	58	.18	1	0.7	0.8	16	INT L		
	26	2318	38.75	19	24.75	155	16.38	7.12	2.4	1.8	2.1	3	97	.12	1	0.6	0.5	18	INT L			
	26	2247	32.48	19	24.32	155	17.33	7.60	1.4	2.1	1.3	18	3	54	.09	1	0.6	0.7	16	INT L		
	26	23	27	19	25.32	155	15.65	9.19	1.7	2.1	1.2	19	3	138	.11	2	0.9	0.5	16	INT L		
	26	2315	38.77	19	24.84	155	14.89	6.89	2.1	2.9	1.6	16	3	135	.11	1	0.8	0.6	16	INT L		
	26	2323	0.51	19	24.38	155	17.43	7.72	1.8	2.0	1.2	19	3	47	.13	1	0.6	0.7	16	INT L		
	26	2337	0.59	19	24.66	155	16.22	7.85	1.3	2.2	1.2	19	3	96	.10	1	0.7	0.6	16	INT L		

# 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	LON W	DEPTH		AMP	DUR	CD	GAP			RMS	MIN	ERH	ERZ NO				
			HRMN	SEC			KM	MAG				MAG	NR	NS					DEG	DIS	KM	FM
1989	NOV	23	750	18.53	19	59.89	155	36.51	13.47	2.1	3.0	2.1	31	3	164	.11	16	0.6	0.5	18	KOH	
		23	849	7.59	19	25.56	155	17.27	6.64	2.6	3.1	1.8	17	2	93	.11	1	0.6	1.2	1	INT L	
		23	834	50.93	19	23.72	155	16.87	7.19	2.1	2.1	1.5	10	1	74	.10	1	0.9	1.6	1	INT L	
		23	984	43.65	19	25.52	155	17.35	3.78	1.2	2.2	1.3	9	1	91	.10	1	0.6	0.9	0	SNC L	
		23	1127	30.43	19	20.41	155	11.47	8.25	1.9	2.2	2.0	40	5	78	.11	4	0.4	0.5	31	SF3	
		23	1146	11.15	19	23.97	155	16.15	10.65	2.3	2.8	1.6	18	3	74	.10	1	0.8	0.7	16	INT L	
		23	1347	11.16	19	25.85	155	17.31	12.20	2.5		1.9	18	3	72	.05	1	0.6	0.6	15	INT L	
		23	1347	53.50	19	25.73	155	16.41	10.67	2.3	3.1	1.7	16	4	124	.08	2	1.1	0.6	12	INT L	
		23	15	7	25.97	19	20.76	155	12.91	27.09	1.7	2.3	2.0	44	5	63	.10	3	0.6	0.7	35	DEP
		23	1536	53.79	19	25.14	155	16.48	11.40	2.1	2.8	1.4	14	3	106	.13	1	1.5	0.8	11	INT L	
		23	1636	20.90	19	24.72	155	16.74	9.32	2.1	2.8	1.6	16	4	90	.10	1	0.8	1.0	12	INT L	
		23	1952	29.25	19	25.17	155	16.68	12.02	1.3	1.9	1.0	13	4	165	.05	2	1.2	0.7	6	INT L	
		23	2028	42.98	19	25.66	155	14.95	3.09	1.3	1.1	1.2	15	2	145	.07	2	0.4	0.7	11	SNC L	
		23	21	8	52.75	19	25.71	155	16.64	9.27	2.5		2.0	12	3	116	.08	2	1.3	0.8	11	INT L
		23	2316	12.21	19	26.20	155	17.19	10.16	2.1		1.5	15	4	186	.13	2	1.3	0.6	12	INT L	
		23	2324	46.45	19	26.59	155	15.95	10.49	1.4	2.1	1.3	16	4	170	.09	3	1.1	0.6	12	INT L	
		23	2341	47.80	19	26.38	155	16.03	11.16	1.9	2.0	1.3	15	3	159	.08	3	1.0	0.8	12	INT L	
		23	2253	2.03	19	25.90	155	17.17	9.89	2.2	3.1	1.6	14	3	101	.12	1	1.2	1.3	12	INT L	
		23	2315	14.36	19	14.26	155	21.71	7.57	1.6	1.6	1.4	24	0	161	.11	4	0.6	1.3	13	SWR	
		23	2317	27.72	19	14.20	155	21.95	7.51	1.6	2.1	1.6	31	1	160	.11	4	0.5	0.9	19	SWR	
		24	0	10.02	19	23.28	155	2.59	8.11	1.6	2.3	1.8	39	2	123	.12	3	0.4	0.5	19	SF5	
		24	215	35.27	19	25.48	155	16.49	10.79	2.5	3.3	1.7	16	4	115	.06	1	1.2	0.5	12	INT L	
		24	233	8.94	19	23.90	155	16.59	7.60	2.1	2.4	1.5	11	2	87	.06	1	0.9	2.0	11	INT L	
		24	356	23.17	19	24.26	155	16.26	10.14	1.9	1.9	0.9	9	1	93	.10	1	1.5	2.6	1	INT L	
		24	440	4.71	19	20.30	155	8.42	7.01	1.4	1.8	1.7	33	1	77	.10	4	0.5	0.8	16	SF4	
24	624	37.95	19	24.19	155	16.92	10.27	2.6	3.3	1.8	14	3	75	.06	1	1.2	1.0	12	INT L			
24	7	29.37	19	25.24	155	16.22	11.19	2.1	2.6	1.5	11	2	167	.13	2	2.6	1.2	4	INT L			
24	935	58.89	19	24.86	155	16.86	9.69	2.4	3.2	1.3	15	1	71	.09	0	0.8	1.0	2	INT L			
24	1012	43.93	19	24.93	155	15.89	10.39		2.1	1.2	11	3	174	.10	2	2.0	0.9	5	INT L			
24	1642	32.89	19	27.27	155	12.83	14.51	2.5		2.1	17	8	259	.14	5	1.5	0.6	10	DEP L			
24	1712	21.45	19	27.60	155	14.74	5.12	1.6	1.7	1.2	17	8	252	.14	5	0.7	2.0	10	INT L			
24	1319	4.98	19	24.63	155	17.19	11.57	2.6		1.5	10	0	64	.10	1	1.9	3.4	0	INT L			
24	1330	51.92	19	27.58	155	16.84	7.33	1.7	1.9	1.3	10	1	229	.25	4	2.1	3.1	0	INT L			
24	1639	3.50	19	27.32	155	14.61	31.65		1.5	1.5	36	4	59	.11	5	0.6	0.8	31	DEP L			
24	1642	32.89	19	27.27	155	12.83	14.51	2.5		2.1	17	8	259	.14	5	1.5	0.6	10	DEP L			
24	1712	21.45	19	27.60	155	14.74	5.12	1.6	1.7	1.2	17	8	252	.14	5	0.7	2.0	10	INT L			
24	1847	33.17	19	25.77	155	15.31	11.35	2.1	2.8	1.4	17	8	171	.10	3	1.1	0.6	9	INT L			
24	2134	54.23	19	26.88	155	13.26	7.74	2.4		1.8	18	9	252	.14	4	0.9	1.1	11	GLN L			
24	2144	53.69	19	26.90	155	15.24	6.66	2.0	2.4	1.4	22	9	210	.12	3	0.6	0.8	13	INT L			
24	2153	43.99	19	26.86	155	15.59	8.51	1.5	1.7	1.0	14	7	199	.19	3	0.9	1.0	8	INT L			
24	23	8	6.99	19	27.48	155	15.27	10.51	2.5	3.2	1.8	18	7	234	.11	3	1.1	0.6	13	INT L		
24	2328	32.94	19	18.59	155	14.29	6.72	1.4	1.8	1.5	40	10	109	.16	3	0.4	0.6	32	SF2			
25	012	44.35	19	19.64	155	12.05	7.96		1.5	1.4	22	3	88	.08	5	0.4	0.6	21	SF3			
25	141	1.97	19	25.60	155	16.91	11.34	2.1	2.7	1.4	22	10	105	.11	1	0.9	0.6	12	INT L			
25	343	56.79	19	25.87	155	15.42	9.39	2.5	3.5	2.0	16	5	242	.13	3	0.9	1.2	GLN L				
25	415	59.94	19	25.86	155	16.73	8.66	2.3	3.0	1.9	18	8	116	.11	2	0.9	0.6	12	INT L			

# 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	LON W	DEPTH		AMP	DUR	CD	GAP			RMS	MIN	ERH	ERZ NO				
			HR	MM			KM	MAG				NR	WS	DEG					SEC	DIS	KM	FM
1989	NOV	28	612	30.45	19	19.87	155	6.80	6.27	1.4	1.8	1.5	36	3	115	.13	5	0.5	1.0	33	SF4	
		28	641	53.84	19	24.98	155	16.56	10.58	1.6	1.7	1.0	20	3	100	.07	1	0.8	0.6	16	INT L	
		28	755	44.43	19	25.42	155	15.88	10.61	2.1	2.7	1.4	19	2	133	.10	2	0.8	0.5	18	INT L	
		28	8	57.78	19	22.46	155	20.79	10.26	1.9	1.9	1.3	37	5	46	.10	3	0.4	0.4	35	KAO	
		28	943	38.78	19	20.56	155	8.22	7.16	1.2	1.5	1.4	37	4	78	.10	4	0.4	0.5	34	SF4	
		28	10	5	40.44	19	23.79	155	16.80	9.70	2.3	2.7	1.4	16	2	68	.09	0	0.8	0.9	15	INT L
		28	1158	39.79	19	23.82	155	16.84	10.37	1.7	1.6	1.1	17	1	68	.14	0	0.8	1.3	16	INT L	
		28	1311	43.21	19	27.42	155	14.11	4.18	1.6	1.5	1.2	6	1	266	.09	5	1.7	2.7	0	SNCL	
		28	1551	43.21	19	21.73	155	19.47	7.61	2.5	3.1	1.6	18	3	108	.16	4	0.7	1.1	0	SWR L	
		28	1610	4.29	19	26.72	155	16.04	9.45	2.2	3.0	1.6	18	2	180	.07	4	0.9	1.4	3	INT L	
		28	1712	7.24	19	25.47	155	15.98	12.14	1.4	2.4	1.3	19	2	131	.08	2	0.8	0.7	17	INT L	
		28	1942	57.60	19	24.34	155	17.02	10.95	2.1	2.8	1.5	19	3	77	.14	1	0.9	0.9	16	INT L	
		28	2149	57.93	19	16.36	155	30.90	9.84	1.6	2.2	1.5	42	5	50	.13	3	0.4	0.6	38	LSW	
		28	2158	22.87	19	24.40	155	16.74	8.93	1.3	1.9	1.2	20	3	81	.13	1	0.7	0.7	17	INT L	
		28	2213	29.49	19	19.69	155	8.03	7.36	1.2	1.7	1.5	44	7	91	.12	4	0.4	0.5	37	SF4	
		28	2345	58.39	19	24.75	155	16.24	12.10	1.9	1.9	1.3	20	3	99	.10	1	0.8	0.6	17	INT L	
		29	020	37.03	19	24.53	155	16.97	12.94	2.1	1.8	2.0	2	82	.15	1	0.9	0.9	18	INT L		
		29	024	24.09	19	24.27	155	26.03	7.94	2.1	2.2	1.4	20	3	80	.16	1	0.7	0.7	17	INT L	
		29	124	37.57	19	19.29	155	50.60	7.83	2.4	2.0	1.7	39	3	122	.15	7	0.6	0.7	37	KON	
		29	2	25.88	19	24.97	155	16.74	9.98	1.8	1.1	2.0	3	96	.10	0	0.7	0.5	17	INT L		
		29	2	53.70	19	24.67	155	16.91	8.32	2.1	2.3	1.5	20	3	85	.10	0	0.6	0.5	17	INT L	
		29	416	43.17	19	24.82	155	16.63	10.37	1.3	1.9	1.0	19	3	93	.07	1	0.7	0.5	16	INT L	
		29	558	58.19	19	25.41	155	16.96	10.86	2.1	1.5	1.8	2	97	.08	1	0.6	0.5	19	INT L		
		29	559	4.66	19	20.21	155	11.60	5.94	1.7	2.0	3	80	.08	5	0.4	0.8	18	SF3			
		29	6	42.29	19	24.70	155	16.94	5.71	1.2	1.8	1.3	14	0	86	.08	0	0.5	0.9	16	INT L	
		29	817	6.78	19	23.76	155	16.16	6.84	2.1	2.6	1.6	16	4	68	.12	1	0.8	1.0	14	INT L	
		29	851	8.67	19	24.89	155	16.39	8.46	2.1	1.8	1.5	3	101	.12	1	1.0	0.7	12	INT L		
		29	914	30.44	19	25.06	155	17.27	13.65	1.4	2.4	1.4	17	4	86	.11	1	0.0	1.3	DEP L		
		29	1217	54.12	19	26.36	155	29.53	10.48	1.2	1.2	2.7	3	42	.10	7	0.4	0.9	17	KAO		
		29	1257	7.30	19	26.61	155	22.05	12.51	2.5	1.7	1.4	2	266	.12	3	1.2	0.8	5	KAO L		
		29	1435	56.66	19	26.35	155	16.79	8.48	2.2	2.7	1.7	16	1	121	.13	2	0.9	1.0	1	INT L	
		29	1543	52.83	19	16.38	155	21.53	7.19	1.7	2.7	1.8	37	5	137	.11	6	0.4	0.9	28	SNR	
		29	1621	6.41	19	25.58	155	14.00	10.52	2.1	2.5	1.4	13	2	222	.26	2	2.2	1.6	1	INT L	
		29	1839	6.27	19	19.83	155	10.29	9.32	1.3	1.5	28	1	89	.09	4	0.5	0.8	24	SF3 L		
		29	20	6	59.28	19	25.60	155	18.28	11.08	2.2	2.8	0.8	9	1	96	.03	1	1.5	0	3	INT L
		29	2121	3.66	19	25.51	155	17.31	8.93	2.2	2.7	1.6	15	4	92	.12	1	1.0	0.5	12	INT L	
		29	2134	21.99	19	24.16	155	17.78	10.14	1.7	2.2	1.2	15	3	66	.14	2	1.1	0.9	12	INT L	
		29	23	7	53.31	19	25.01	155	16.69	9.32	2.1	2.7	1.6	15	4	98	.08	1	1.1	0.7	11	INT L
		30	141	13.80	19	25.84	155	19.01	6.82	1.9	1.3	0.9	21	4	90	.10	3	0.6	0.7	17	INT L	
		30	024	44.25	19	24.11	155	15.91	7.62	1.9	2.2	1.4	18	2	95	.15	2	0.7	0.6	16	INT L	
		30	3	35.58	19	10.54	155	38.95	4.23	1.8	1.9	1.7	44	8	109	.15	9	0.3	1.9	36	LSW	
		30	351	10.09	19	23.81	155	17.68	10.27	2.1	2.3	1.4	19	3	47	.12	2	0.7	0.8	17	INT L	
		30	558	41.87	19	24.45	155	17.26	7.58	2.0	2.3	1.3	15	0	60	.10	1	0.6	1.3	16	INT L	
		30	859	13.03	19	25.84	155	19.15	12.94	2.1	2.4	1.7	17	3	89	.13	3	1.4	0.9	1	KAO L	
		30	914	11.73	19	25.11	155	19.90	13.69	2.2	2.0	1.5	14	1	122	.17	5	1.3	1.8	1	DEP L	

## 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME		LAT N	LON W		DEPTH AMP		DUR	CD	GAP			RMS	MIN	ERH	ERZ NO				
			HR	MM		KM	MAG	MAG	NR			NS	DEG	SEC					DYS	KM	FM	RMK
1989	NOV	27	011	49.73	19	24.34	155	16.91	9.48	2.1	2.7	1.5	18	2	79	.12	1	0.7	1.0	16	INT	L
		27	036	14.41	19	23.88	155	17.03	5.13	1.7	2.4	1.4	19	3	68	.11	1	0.5	0.6	17	INT	L
		27	051	48.57	19	23.45	155	19.63	6.75	1.6	1.2	1.0	26	6	116	.10	3	0.3	0.5	20	KAO	L
		27	131	4.04	19	23.89	155	16.83	8.56	2.1	2.1	1.4	19	3	69	.13	0	0.6	0.7	17	INT	L
		27	145	24.44	19	24.77	155	16.40	9.84	1.5	1.9	1.0	19	3	97	.11	1	0.7	0.5	17	INT	L
		27	222	10.17	19	25.10	155	16.37	10.55	2.1	2.5	1.5	20	3	108	.09	1	0.7	0.5	18	INT	L
		27	3	11.76	19	24.56	155	17.34	7.64	2.0	2.5	1.4	17	3	70	.08	1	0.5	0.5	16	INT	L
		27	335	40.24	19	24.86	155	16.69	10.00	1.8	2.4	1.3	20	3	94	.10	1	0.7	0.6	17	INT	L
		27	450	12.27	19	24.74	155	16.79	9.58	2.4	3.0	1.6	22	2	60	.10	0	0.6	0.6	20	INT	L
		27	451	2.02	19	23.57	155	16.26	10.61	1.4	1.9	1.4	19	3	58	.12	1	0.7	0.7	18	INT	L
		27	5	58.02	19	19.76	155	8.57	6.53	1.2	2.2	1.7	48	5	78	.13	5	0.4	0.5	44	SF4	
		27	543	39.53	19	23.98	155	16.46	7.62	2.1	2.3	1.4	22	3	59	.13	0	0.5	0.6	19	INT	L
		27	619	57.07	19	24.91	155	15.70	10.01	2.0	2.3	1.3	20	3	117	.12	2	0.8	0.6	17	INT	L
		27	655	37.21	19	24.20	155	16.74	9.02	2.0	2.4	1.3	20	3	78	.10	1	0.6	0.6	17	INT	L
		27	658	8.21	19	47.91	155	34.82	14.25	3.4	4.0	3.6	60	8	96	.11	13	0.3	0.4	54	NEA	F
		27	738	56.16	19	11.72	155	25.88	32.86	2.0	2.1	1.8	46	4	150	.12	5	0.7	0.6	43	DLS	
		27	755	3.58	19	24.74	155	15.95	10.93	2.0		1.4	20	3	104	.12	2	0.8	0.6	17	INT	L
		27	8	26.06	19	23.01	155	30.25	10.43	2.0	1.4	1.4	34	5	40	.11	5	0.4	0.8	31	KAO	
		27	850	10.01	19	25.03	155	16.67	9.57	2.0	2.3	1.4	17	2	99	.10	1	0.7	0.6	16	INT	L
		27	926	48.26	19	25.09	155	16.39	9.96	1.8	1.9	1.3	18	2	107	.10	1	0.8	0.6	16	INT	L
		27	10	36.01	19	24.66	155	16.24	8.98	1.5		1.0	18	2	96	.08	1	0.7	0.6	16	INT	L
		27	1011	32.85	19	26.78	155	23.79	8.00	1.4	1.4	1.2	20	5	66	.07	4	0.4	0.6	16	KAO	
		27	1135	40.87	19	25.03	155	15.87	10.87	1.8	1.7	1.1	19	3	118	.11	2	0.9	0.6	17	INT	L
		27	1149	49.94	19	23.71	155	18.13	8.54	2.4		1.8	14	3	94	.10	2	0.8	0.9	12	INT	L
		27	13	9.44	19	23.95	155	17.08	12.27	2.2	2.6	1.4	19	3	69	.10	1	0.8	0.9	16	INT	L
		27	14	6.42	19	24.65	155	16.39	11.35	1.3	1.9	1.1	19	3	93	.13	1	0.9	0.8	16	INT	L
		27	16	8.34	19	24.40	155	17.53	10.43	1.5	2.1	1.3	18	3	47	.10	1	0.8	0.7	16	INT	L
		27	1633	44.08	19	47.25	155	32.96	15.60		1.6	1.7	24	4	117	.11	14	0.6	0.7	21	REA	
		27	1636	59.15	19	24.74	155	16.13	10.71	1.3	1.9	1.1	20	3	101	.12	2	0.8	0.6	17	INT	L
		27	1747	29.02	19	23.98	155	16.37	10.25	2.1	2.3	1.4	20	3	73	.07	0	0.6	0.6	17	INT	L
		27	1827	8.53	19	24.46	155	16.65	11.37	1.4	1.9		19	3	84	.08	1	0.8	0.7	16	INT	L
		27	1943	51.09	19	25.11	155	16.06	11.16	1.3	2.0	1.1	19	3	116	.08	2	0.9	0.6	16	INT	L
		27	2053	34.69	19	25.13	155	16.50	10.84	2.2	2.6	1.5	20	3	105	.08	1	0.7	0.5	17	INT	L
		27	2058	8.14	19	24.35	155	16.75	9.16	1.3	2.1	1.2	19	4	80	.12	1	0.8	0.7	15	INT	L
		27	2119	25.16	19	25.20	155	15.81	10.79	1.9	1.6	1.2	19	3	127	.08	2	0.8	0.5	16	INT	L
		27	2159	1.91	19	25.08	155	16.22	11.24	1.3	2.4	1.1	19	3	111	.10	1	0.9	0.6	16	INT	L
		27	2318	24.29	19	24.98	155	14.77	11.14	2.1	2.9	1.5	19	3	157	.14	1	1.0	0.6	17	INT	L
		27	2350	15.77	19	25.50	155	14.52	5.14	1.1	1.8	1.0	18	2	196	.14	2	0.9	1.1	16	INT	L
		28	010	1.88	19	20.48	155	7.93	8.53	1.2	1.2	29	4	85	.08	4	0.4	0.5	27	SF4		
		28	053	43.24	19	25.09	155	16.16	10.25	1.3	2.0	1.2	19	3	114	.08	2	0.8	0.5	16	INT	L
		28	137	33.28	19	24.15	155	17.78	9.40	1.3	1.6	1.0	18	2	45	.13	2	0.7	1.0	16	INT	L
		28	323	54.38	19	24.43	155	16.77	11.79	2.5		1.7	19	3	82	.13	1	0.7	0.7	16	INT	L
		28	356	57.26	19	25.06	155	16.20	9.90	1.5	1.6	1.1	18	3	111	.11	1	0.8	0.6	16	INT	L
		28	447	23.16	19	24.92	155	16.70	10.66	1.2	1.9	1.1	19	3	96	.13	1	0.9	0.7	16	INT	L
		28	546	41.35	19	25.23	155	16.53	10.58	2.3	2.8	1.2	20	3	107	.08	1	0.7	0.5	17	INT	L





YEAR	MON	DA	ORIGIN TIME		LAT N	DEG MIN	ION W	DEPTH AMP		DUR	CD	GAP RMS			MIN	ERH	ERZ NO						
			HRVN	SEC				KM	MAG			MAG	NR	NS				DEG	SEC	DIS	KM	FM	RMK
1989	DEC	4	1511	48.94	19	25.04	155	16.08	19.27	1.7	2.5	1.6	14	3	113	.12	2	2.0	1.0	5	DEP	L	
		4	16	8	17.08	19	26.07	155	16.60	12.24	2.1	3.0	1.3	15	2	124	.15	2	1.1	1.2	1	INT	L
		4	1740	15.06	19	26.50	155	14.41	12.06	1.7	1.6	1.1	8	1	278	.04	6	3.5	1.3	0	INT	L	
		4	19	2	0.28	19	20.60	155	12.71	9.87	1.2	1.2	2.3	1	7.0	.08	4	0.5	0.6	18	SF2		
		4	1917	11.22	19	25.49	155	18.02	11.52	1.5	2.7	1.3	16	5	167	.14	1	1.6	1.0	3	INT	L	
		4	2041	54.48	19	25.35	155	16.69	8.44	1.4	2.0	1.1	19	5	106	.08	1	0.6	0.8	5	INT	L	
		4	2134	39.65	19	24.31	155	15.65	7.94	1.9	2.4	1.3	16	3	88	.11	2	0.7	0.9	13	INT	L	
		4	2330	41.12	19	24.48	155	16.15	8.27	1.6	2.2	1.0	19	2	91	.12	1	0.7	0.7	17	INT	L	
		4	2338	46.55	19	25.76	155	15.90	11.13	1.7	2.0	1.1	19	2	141	.16	2	1.1	0.9	18	INT	L	
		5	019	25.51	19	25.74	155	15.80	11.02	1.6	1.7	0.9	18	3	149	.12	3	1.1	0.6	15	INT	L	
1989	DEC	5	1	8	42.61	19	23.98	155	16.88	8.00	1.6	2.1	1.1	17	1	71	.11	1	0.5	0.9	17	INT	L
		5	159	57.07	19	25.12	155	15.29	8.08	1.5	2.1	1.0	17	2	141	.11	2	0.9	0.6	17	INT	L	
		5	237	10.55	19	24.52	155	15.44	13.47	1.9	2.1	1.2	17	3	122	.09	2	1.1	0.7	17	DEP	L	
		5	259	39.37	19	49.41	155	13.99	16.59	1.0	1.7	1.7	30	4	105	.13	11	0.5	0.9	26	KEA		
		5	346	50.57	19	28.24	155	27.10	9.05	2.8	2.3	2.0	55	13	67	.14	6	0.3	0.5	46	KAO		
		5	422	49.61	19	20.99	155	4.46	7.56	1.7	1.9	1.8	43	4	97	.12	3	0.4	0.4	42	SF5		
		5	446	24.52	19	24.67	155	17.15	13.44	2.4	3.5	1.6	18	3	63	.10	1	0.8	0.6	17	DEP	L	
		5	931	48.68	19	25.97	155	14.22	8.71	1.9	2.4	1.4	18	2	214	.12	2	1.1	0.9	16	INT	L	
		5	1217	0.75	21	42.35	157	35.66	17.15	4.7	5.5	4.0	61	9	264	.17	60	1.6	18	8	DIS	F	
		5	15	0	4.82	19	23.87	155	17.44	3.33	2.1	1.3	9	2	89	.28	1	0.9	1.5	2	SSC	L	
1989	DEC	5	1544	5.63	19	29.69	155	27.10	4.55	2.5	2.7	2.0	44	7	69	.13	4	0.3	1.8	24	KAO		
		5	1551	45.18	19	15.50	155	26.87	9.58	1.8	2.5	1.8	36	4	76	.12	5	0.4	0.8	16	LSW		
		5	16	2	58.78	19	25.07	155	17.00	24.86	2.6	3.2	1.7	11	1	92	.11	1	2.7	1.7	2	DEP	L
		5	1610	29.89	19	24.12	155	13.75	16.80	2.1	2.3	1.6	15	2	194	.13	1	1.6	1.2	2	DEP	L	
		5	1622	57.14	19	20.63	155	8.98	8.40	1.8	2.0	1.9	37	2	67	.09	3	0.4	0.7	29	SF4		
		5	17	4	24.38	19	25.68	155	17.62	14.33	1.9	1.8	1.2	14	4	85	.14	1	1.7	0.7	3	DEP	L
		5	1753	42.84	19	20.65	155	17.83	16.41	2.0	1.8	1.3	10	2	264	.06	5	3.0	1.3	1	DEP	L	
		5	1817	31.63	19	24.44	155	19.12	9.51	2.1	1.2	1.4	1	118	.16	2	0.9	2.0	0	KAO	L		
		5	19	0	59.91	19	22.51	155	16.30	14.88	1.7	1.6	1.1	11	2	183	.17	1	2.5	1.6	0	DEP	L
		5	1926	58.32	19	24.65	155	16.97	8.64	1.6	2.0	1.1	13	1	85	.08	0	0.9	1.4	2	INT	L	
1991	DEC	5	1941	31.85	19	58.13	155	30.64	31.30	3.1	3.5	2.7	63	14	173	.14	20	0.6	1.1	47	KEA		
		5	2039	26.62	19	24.83	155	17.14	3.80	1.4	2.3	1.4	14	0	62	.13	0	0.4	0.5	0	SNC	L	
		5	21	7	36.73	19	25.61	155	15.00	3.70	1.6	1.8	1.2	11	2	181	.20	2	0.8	1.0	2	SNC	L
		5	2128	53.48	19	24.18	155	18.10	6.56	1.5	1.5	1.1	15	3	79	.13	2	0.7	0.8	12	INT	L	
		5	2153	42.84	19	23.80	155	15.52	3.71	1.8	1.9	1.1	18	3	102	.16	2	0.5	0.5	16	SEC	L	
		5	2229	38.90	19	25.23	155	15.26	11.57	2.1	2.9	1.3	18	3	148	.11	2	1.1	0.6	17	INT	L	
		5	2316	29.97	19	25.00	155	17.09	9.56	1.7	1.9	1.1	15	2	89	.14	0	1.0	0.9	16	INT	L	
		5	2342	27.26	19	22.71	155	17.50	6.74	1.6	1.5	0.9	13	2	121	.08	2	0.6	1.1	14	INT	L	
		6	018	52.80	19	24.74	155	16.08	10.08	1.6	1.9	1.0	18	2	102	.10	2	0.7	0.8	16	INT	L	
		6	050	41.90	19	24.93	155	16.37	8.49	1.9	2.2	1.3	20	3	102	.12	1	0.8	0.5	17	INT	L	
1991	DEC	6	1	2	44.61	19	25.74	155	13.53	9.36	1.8	1.6	1.0	15	2	268	.12	2	1.4	0.9	13	SF2	L
		6	245	2.90	19	20.78	155	6.21	7.79	1.6	1.7	1.6	45	7	101	.12	5	0.4	0.4	38	SF4		
		6	312	19.00	19	24.71	155	16.94	9.47	1.6	2.0	1.0	18	3	86	.10	0	0.8	0.6	15	INT	L	
		6	317	58.12	19	20.74	155	10.70	8.82	1.5	1.9	1.7	38	6	74	.11	3	0.5	0.4	39	SF3		
		6	343	30.61	19	25.75	155	14.64	7.40	1.8	2.2	1.1	21	3	172	.19	2	1.0	1.0	18	INT	L	
		6	347	19.00	19	24.71	155	16.94	9.47	1.6	2.0	1.0	18	3	86	.10	0	0.8	0.6	15	INT	L	
		6	348	19.00	19	24.71	155	16.94	9.47	1.6	2.0	1.0	18	3	86	.10	0	0.8	0.6	15	INT	L	
		6	349	19.00	19	24.71	155	16.94	9.47	1.6	2.0	1.0	18	3	86	.10	0	0.8	0.6	15	INT	L	
		6	350	19.00	19	24.71	155	16.94	9.47	1.6	2.0	1.0	18	3	86	.10	0	0.8	0.6	15	INT	L	
		6	351	19.00	19	24.71	155	16.94	9.47	1.6	2.0	1.0	18	3	86	.10	0	0.8	0.6	15	INT	L	

# 1989 HVO EARTHQUAKE SUMMARY LIST

ORIGIN TIME			LAT N		LON W		DEPTH AMP		CD		GAP		RMS		MIN		ERR		NO		
YEAR	MON	DA	HHR	SEC	DEG	MIN	DEG	MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	KM	FM	RMK	
1989	DEC	9	956	51.09	19	26.59	155	14.89	9.77	2.1	2.7	1.4	15	4	218	.09	4	1.2	0.8	13	INT L
		9	1037	37.74	19	26.31	155	16.35	10.12	2.2	2.8	1.6	17	4	127	.08	2	1.0	0.7	13	INT L
		9	1053	23.65	19	25.14	155	16.94	11.16	2.1	2.1	1.8	15	6	49	.13	0	1.3	0.8	12	INT L
		9	1114	12.94	19	25.39	155	16.51	8.96	2.0	2.2	1.1	18	6	112	.08	1	1.0	0.5	12	INT L
		9	1132	52.88	19	24.90	155	16.21	8.49	1.8	2.2	1.1	16	4	154	.08	1	1.2	0.7	12	INT L
		9	1139	36.25	19	24.89	155	16.38	8.08	1.6	1.5	0.9	11	3	162	.07	1	1.6	0.7	8	INT L
		9	1153	40.87	19	25.40	155	16.54	9.10	1.8	2.2	1.0	18	6	112	.07	1	1.0	0.5	12	INT L
		9	1212	39.87	19	25.98	155	15.46	7.93	1.9	2.7	1.2	18	5	172	.08	3	0.8	0.6	13	INT L
		9	1225	21.74	19	24.11	155	16.16	6.12	1.7	2.1	1.0	13	6	116	.08	2	0.9	0.6	8	INT L
		9	1241	29.92	19	25.50	155	16.04	9.34	1.8	2.2	1.1	17	6	131	.10	2	1.0	0.6	10	INT L
		9	1255	37.84	19	25.56	155	16.61	8.70	1.8	2.1	1.0	17	5	113	.07	1	1.0	0.5	11	INT L
		9	1313	59.31	19	25.22	155	16.50	9.12	1.9	2.2	1.3	15	4	107	.05	1	0.9	0.4	11	INT L
9	1439	36.64	19	25.49	155	15.95	9.17	1.8	2.2	1.3	15	5	133	.09	2	1.1	0.6	9	INT L		
9	1510	0.77	19	20.82	155	4.11	7.36	2.5	3.2	2.8	50	4	98	.10	3	0.4	0.5	48	SF5		
9	1517	20.36	19	20.77	155	4.17	5.96	2.1	2.3	2.1	42	5	101	.10	3	0.4	0.8	35	SF5		
9	1636	34.76	19	25.04	155	16.94	7.45	2.1	2.9	1.5	18	5	93	.12	0	0.9	0.6	13	INT L		
9	17	30.43	19	26.30	155	16.70	10.85	2.1	2.9	1.6	18	5	126	.13	2	1.2	0.6	13	INT L		
9	1735	45.67	19	25.31	155	16.32	11.67	2.1	2.8	1.5	11	1	115	.06	1	0.9	0.10	10	INT L		
9	1942	44.89	19	19.43	155	8.15	7.38	1.7	2.2	1.7	38	2	90	.11	4	0.4	0.7	24	SF4		
10	056	19.81	19	26.48	155	15.67	10.59	1.6	1.6	1.0	11	2	180	.07	3	1.2	1.3	9	INT L		
10	639	5.03	19	15.32	155	26.45	7.08	1.5	1.4	2.7	2	80	.14	5	0.4	1.2	11	LSW			
10	659	52.92	19	25.33	155	17.15	9.82	2.1	2.0	1.5	13	0	65	.09	1	0.9	1.9	3	INT L		
10	722	37.39	19	25.27	155	15.00	12.23	2.0	2.3	1.5	18	2	165	.12	2	1.1	0.9	0	INT L		
10	730	29.09	19	25.23	155	16.83	9.17	1.8	2.1	1.4	16	1	100	.10	1	0.7	1.0	2	INT L		
10	740	1.70	19	28.65	155	16.82	10.56	2.0	2.0	1.3	16	4	270	.18	2	1.2	1.2	1	GLN L		
10	818	35.22	19	24.91	155	18.26	16.03	2.2	2.2	1.4	16	3	91	.20	1	2.0	2.7	2	DEP L		
10	926	34.40	19	19.44	155	12.40	5.91	1.1	1.3	2.2	2	87	.11	5	0.5	1.5	17	SF2			
10	950	0.83	19	20.41	155	4.61	5.80	1.5	1.4	1.8	30	119	.13	3	0.5	1.3	22	SF5			
10	16	8	38.29	19	20.41	155	6.01	8.01	0.8	1.3	1.5	25	2	112	.11	5	0.6	0.9	15	SF4	
10	17	5	25.98	19	21.27	155	21.26	4.84	2.1	2.2	1.3	7	1	284	.08	9	1.7	11.3	0	SWR L	
10	1756	19.27	19	31.60	155	19.74	8.20	2.0	2.0	1.5	7	1	323	.06	9	2.8	4.8	0	MLO L		
10	1930	8.13	19	14.93	155	26.71	11.19	1.2	1.5	2.4	1	89	.09	5	0.4	1.0	10	LSW			
10	2258	28.70	19	25.81	155	14.14	10.01	2.1	1.7	2.2	4	212	.10	2	1.0	0.6	18	INT L			
11	013	13.82	19	25.93	155	13.73	9.49	1.7	1.7	1.2	17	2	225	.17	3	1.5	1.1	15	SF2 L		
11	054	16.28	19	25.77	155	14.01	12.46	2.0	1.8	1.2	20	4	215	.10	2	1.1	0.7	17	INT L		
11	7	2	29.01	19	21.73	155	5.27	7.97	1.9	2.0	50	6	82	.13	5	0.5	0.4	44	SF5		
11	9	0	55.22	19	24.42	155	15.13	8.18	1.7	1.5	1.1	22	4	94	.14	1	0.7	0.6	18	INT L	
11	1023	37.34	19	25.57	155	16.53	10.76	2.1	2.5	1.4	17	4	116	.06	1	0.8	0.6	13	INT L		
11	1025	41.83	19	24.69	155	16.45	7.77	1.6	1.7	1.2	16	3	93	.10	1	0.8	0.9	13	INT L		
11	1049	15.66	19	25.18	155	16.49	9.96	2.1	1.6	1.7	4	106	.11	1	0.8	1.0	13	INT L			
11	1157	58.23	19	54.73	156	0.89	49.27	2.7	2.7	2.2	44	6	237	.14	31	1.5	1.0	40	HUA		
11	1244	47.86	19	23.09	155	17.60	6.08	1.7	1.8	1.2	13	0	111	.13	1	0.9	1.5	3	INT L		
11	1324	29.01	19	21.27	155	18.31	10.86	2.4	2.6	1.5	19	4	92	.14	3	0.8	1.0	1	SWR L		
11	1339	28.61	19	24.15	155	18.97	12.61	2.2	2.2	1.4	17	5	98	.14	2	1.0	1.2	1	INT L		
11	1815	5.29	19	17.83	155	30.00	9.28	1.7	1.5	1.5	30	2	45	.11	5	0.4	0.9	18	LSW		

# 1989 HVO EARTHQUAKE SUMMARY LIST

YEAR	MON	DA	ORIGIN TIME			LAT N	LON W		DEPTH AMP		CD	GAP RMS			MIN	ERH	ERZ NO					
			HR	MM	SS		KM	MAG	NR	NS		DEG	SEC	DIS				KM	KM	FM	RMK	
1989	DEC	8	4	0	19-23	19	25.42	155	14.57	9.34	2.1	2.8	1.2	21	4	193	.12	1	1.0	0.7	17	INT L
		8	615	51.14	19	24.35	155	16.65	11.24	1.9	2.3	1.2	21	4	81	.14	1	0.9	0.8	17	INT L	
		8	730	49.69	19	24.93	155	13.08	6.47	1.1	1.0	29	5	70	.12	5	0.4	0.7	25	SF2		
		8	8	40.12	19	25.08	155	15.06	3.51	2.1	3.0	1.5	20	4	148	.11	1	0.5	0.4	17	SNC L	
		8	3	45.88	19	24.48	155	15.84	6.23	1.8	2.4	1.4	18	2	94	.12	2	0.5	0.8	17	INT L	
		8	8	0.43	19	24.64	155	15.51	14.94	2.1	2.3	1.4	21	4	107	.15	2	1.2	0.7	18	DEP L	
		8	821	31.96	19	24.56	155	16.94	9.94	2.1	2.3	1.4	21	4	83	.14	1	0.7	0.7	17	INT L	
		8	843	14.35	19	24.39	155	16.86	10.04	2.1	2.4	1.3	19	3	81	.13	1	0.9	0.8	17	INT L	
	8	910	44.24	19	24.39	155	15.68	9.67	1.7	2.1	1.2	20	4	91	.13	2	0.9	0.6	17	INT L		
	8	920	54.66	19	25.58	155	14.66	7.81	1.9	2.1	1.3	19	4	193	.12	2	0.9	0.7	16	INT L		
	8	948	2.10	19	20.44	155	6.71	6.55	1.1	1.5	1.4	29	4	103	.13	6	0.4	0.7	27	SF4		
	8	956	59.87	19	25.02	155	15.94	7.19	1.7	2.5	1.3	14	4	116	.14	2	1.0	1.0	12	INT L		
	8	1020	12.72	19	25.35	155	16.44	10.43	1.7	2.0	1.1	16	5	113	.14	1	1.1	0.6	12	INT L		
	8	1038	40.77	19	19.58	155	8.72	5.75	1.8	2.1	1.9	44	7	79	.11	4	0.4	0.7	39	SF4		
	8	1046	32.83	19	24.81	155	15.99	8.67	2.3	3.0	1.5	16	4	106	.11	2	0.9	1.0	13	INT L		
	8	1126	56.71	19	20.13	155	6.91	8.53	2.5	2.6	46	4	107	.11	5	0.5	0.5	43	SF4			
	8	1127	53.24	19	25.27	155	17.26	11.23	2.4	3.1	1.7	16	5	90	.13	1	1.2	0.7	11	INT L		
	8	1159	31.29	19	23.61	155	17.23	10.70	1.9	2.4	1.2	17	5	76	.15	1	1.3	1.1	12	INT L		
	8	1214	11.61	19	20.27	155	9.71	6.73	1.4	1.2	26	4	78	.12	3	0.5	0.9	21	SF3			
	8	1235	2.13	19	24.48	155	16.40	9.67	2.0	2.4	1.2	17	5	88	.11	1	0.9	0.8	13	INT L		
	8	1317	18.61	19	25.89	155	16.95	9.54	1.8	2.4	1.2	18	5	109	.09	1	1.0	0.6	12	INT L		
	8	1338	23.20	19	25.71	155	17.44	10.36	1.8	2.3	1.1	16	4	108	.12	1	1.2	0.6	12	INT L		
	8	1356	49.19	19	25.65	155	16.84	10.86	1.7	2.1	1.1	16	3	108	.07	1	0.9	0.5	12	INT L		
	8	1421	11.90	19	24.97	155	17.07	10.36	2.1	2.8	1.4	16	4	89	.10	1	1.2	0.6	12	INT L		
	8	15	9	33.28	19	25.32	155	16.81	10.46	1.9	2.4	1.1	16	4	103	.09	1	0.8	0.7	12	INT L	
	8	1541	2.18	19	25.83	155	16.13	10.15	1.7	1.7	1.0	15	4	191	.08	2	1.6	0.6	10	INT L		
	8	16	7	45.66	19	25.35	155	17.27	9.77	1.8	2.0	1.1	16	4	91	.09	1	1.0	0.5	12	INT L	
	8	1649	33.34	19	25.76	155	16.55	9.62	1.8	2.1	1.2	18	5	120	.09	2	1.1	0.5	12	INT L		
	8	1721	5.83	19	14.59	155	27.77	8.44	2.0	2.4	1.9	36	5	88	.14	4	0.4	0.7	32	LSW		
	8	1739	57.19	19	25.59	155	16.83	8.87	2.0	2.2	1.3	14	2	108	.07	1	1.0	0.8	11	INT L		
	8	1811	13.55	19	25.47	155	16.43	8.80	1.7	1.7	1.0	14	4	116	.10	1	1.0	0.8	11	INT L		
	8	1915	4.17	19	25.49	155	16.16	11.64	1.8	1.9	1.1	16	3	127	.08	2	0.7	0.9	13	INT L		
	8	2022	28.26	19	25.62	155	17.22	8.94	1.7	2.0	1.1	18	5	95	.10	1	0.9	0.5	13	INT L		
	8	2052	43.65	19	24.73	155	17.53	9.80	1.7	1.6	0.9	16	4	70	.07	1	1.0	0.6	13	INT L		
	8	2142	44.49	19	25.35	155	16.40	7.11	1.9	2.6	1.3	15	5	115	.10	1	0.9	0.5	10	INT L		
	8	2238	10.05	19	24.21	155	15.80	7.11	1.6	1.7	1.0	14	3	84	.11	2	0.9	1.1	12	INT L		
	9	0	25.78	19	26.13	155	16.34	10.52	2.0	2.3	1.2	17	5	137	.07	3	1.0	0.5	12	INT L		
	9	020	22.46	19	21.11	155	5.94	8.33	2.6	3.2	2.8	52	6	95	.12	5	0.4	0.5	48	SF4 L		
	9	144	0.18	19	26.43	155	15.78	8.45	1.9	2.2	1.2	17	5	173	.11	3	0.9	0.5	12	INT L		
	9	244	22.78	19	25.72	155	16.75	8.51	1.6	1.9	0.9	16	5	113	.07	2	1.0	0.6	11	INT L		
	9	343	6.46	19	16.33	155	23.12	0.96	1.3	1.0	17	5	119	.09	4	0.4	0.6	12	SWR			
	9	543	27.69	19	29.82	155	4.15	47.93	2.1	2.1	1.9	49	5	45	.11	1	0.8	1.2	44	DEP		
	9	612	32.14	19	26.42	155	14.93	11.23	1.9	2.8	1.2	17	4	205	.06	3	1.1	0.6	13	INT L		
	9	618	21.47	19	20.22	155	6.49	7.91	1.6	2.1	1.8	43	6	111	.09	6	0.4	0.6	38	SF4		
	9	911	17.35	19	25.61	155	16.42	9.24	1.7	1.9	1.1	17	4	121	.07	2	1.0	0.6	13	INT L		
	9	912	17.35	19	25.61	155	16.42	9.24	1.7	1.9	1.1	17	4	121	.07	2	1.0	0.6	13	INT L		
	9	912	17.35	19	25.61	155	16.42	9.24	1.7	1.9	1.1	17	4	121	.07	2	1.0	0.6	13	INT L		
	9	912	17.35	19	25.61	155	16.42	9.24	1.7	1.9	1.1	17	4	121	.07	2	1.0	0.6	13	INT L		

## 1989 HVO EARTHQUAKE SUMMARY LIST

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YEAR	MON	DA	HRMN	SEC	LAT N	DEG MIN	DEG MIN	DEPTH AMP	DUR	CD	GAP	RMS	MIN	ERH	ER2	NO						
ORIGIN TIME								KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	KM	FM	RUMK			
1989	DEC	11	2034	28.01	19	24.55	155	0.08	7.31	1.4	1.6	41	5	139	.14	3	0.5	0.4	36	SF5		
		11	2122	57.73	19	11.00	155	41.07	3.72	2.0	1.6	1.7	44	7	122	.18	10	0.4	1.5	37	LSW	
		11	2350	55.82	19	22.47	105	26.19	10.05	1.5	1.4	1.4	35	7	36	.11	3	0.3	0.5	29	KAO	
		12	036	12.44	19	19.71	155	6.51	8.44	1.2	1.4	36	4	124	.12	5	0.4	0.5	33	SF4		
		12	235	1.16	19	10.45	155	42.70	4.36	2.1	1.2	1.5	25	4	135	.16	13	0.6	4.9	25	LSW	
		12	351	27.61	19	24.63	155	14.82	11.77	1.8	1.6	1.1	16	3	121	.11	1	1.1	0.6	14	INT L	
		12	4	0	4.87	19	24.19	155	16.70	10.41	2.0	2.0	1.3	19	4	77	.13	1	0.7	0.7	16	INT L
		12	4	1	54.18	19	24.11	155	16.99	11.70	2.0	2.0	1.3	19	4	73	.14	1	0.8	0.9	16	INT L
		12	4	5	59.70	19	23.52	155	17.43	11.00	1.8	2.0	1.2	18	3	52	.11	3	0.6	0.9	15	INT L
		12	414	34.09	19	25.78	155	14.04	6.49	1.7	2.0	1.3	19	4	215	.12	2	0.7	0.7	15	INT L	
		12	429	27.85	19	23.55	155	17.10	11.16	2.1	2.1	1.4	19	3	61	.13	3	0.6	0.9	16	INT L	
		12	441	11.12	19	23.26	155	17.81	8.70	2.0	2.0	1.2	17	3	57	.13	3	0.6	1.0	14	INT L	
		12	449	16.08	19	24.17	155	17.64	10.16	1.9	1.6	1.2	17	3	45	.08	2	0.6	0.7	14	INT L	
		12	1056	11.45	19	23.89	155	16.52	8.56	1.7	1.5	1.3	14	0	71	.12	0	0.7	1.2	1	INT L	
		12	1453	20.63	19	44.67	155	0.23	7.17	2.3	2.1	0.9	11	0	326	.12	42	12.4	4.2	1	HIL B*	
		12	1634	13.89	19	22.66	155	18.86	16.92	2.0	2.0	2.5	1.2	14	1	89	.09	2	1.1	1.6	1	DEP L
		12	1844	10.44	19	23.04	155	16.97	9.80	1.8	1.7	1.0	11	1	79	.12	1	1.0	1.9	1	INT L	
		12	2211	43.98	19	17.38	155	13.05	8.26	1.8	1.7	1.6	40	5	138	.11	1	0.4	0.5	35	SF2 L	
		13	012	34.39	19	56.17	155	43.48	16.72	1.2	1.9	1.4	23	5	141	.10	11	0.7	1.2	19	KOH	
		13	040	6.40	19	19.72	155	7.12	6.87	0.9	1.4	1.4	39	6	112	.12	5	0.4	0.6	35	SF4	
		13	122	57.56	19	25.49	155	14.42	11.67	2.2	1.4	23	4	170	.13	2	1.0	0.7	20	INT L		
		13	129	10.39	19	24.59	155	16.16	9.43	1.7	1.7	1.2	20	4	94	.14	1	0.9	0.6	16	INT L	
		13	141	36.13	19	24.79	155	15.12	7.91	1.5	1.5	1.0	19	3	124	.13	1	1.0	0.6	17	INT L	
		13	158	24.47	19	24.40	155	16.56	6.50	1.8	2.2	1.4	19	4	83	.15	1	0.6	0.7	16	INT L	
		13	233	58.96	19	24.39	155	26.14	9.92	1.2	1.2	32	2	33	.11	2	0.4	0.6	31	KAO		
		13	429	7.21	19	21.14	155	4.83	7.34	1.7	1.9	1.7	47	6	94	.16	4	0.4	0.5	41	SF5	
		13	735	33.71	19	19.97	155	11.32	7.14	1.6	1.8	1.6	41	6	86	.13	5	0.4	0.6	36	SF3	
		13	834	7.14	19	24.34	155	15.85	10.61	1.8	1.6	1.0	17	4	106	.10	2	1.0	0.6	14	INT L	
		13	10	1	41.86	19	18.62	155	15.41	8.33	1.9	2.1	1.7	38	4	102	.12	4	0.4	0.8	27	SF1
		13	12	4	13.84	19	24.13	155	17.96	14.07	2.0	2.5	1.4	21	4	59	.23	2	1.3	1.1	1	DEP L
		13	1742	57.70	19	18.20	155	27.15	10.41	1.6	1.4	1.4	31	1	47	.11	8	0.4	1.1	21	LSW	
		13	1751	7.06	19	25.03	155	15.21	13.40	1.9	1.9	1.4	15	3	138	.15	2	0.9	0.9	1	DEP L	
		14	457	10.65	19	25.73	155	14.97	12.58	2.0	1.8	1.3	18	3	165	.12	2	1.0	0.9	17	INT L	
		14	528	19.79	19	23.97	155	15.61	12.26	2.2	2.3	1.5	19	4	131	.11	2	1.0	0.7	17	INT L	
		14	551	3.27	19	25.10	155	14.64	10.81	1.8	1.7	1.2	20	4	179	.11	1	1.0	0.5	16	INT L	
		14	615	47.73	19	20.16	155	7.97	8.59	2.1	2.5	2.0	49	8	86	.13	5	0.4	0.3	45	SF4	
		14	724	20.09	19	24.43	155	0.41	7.59	1.8	2.3	1.8	41	4	138	.14	3	0.5	0.4	38	SF5	
		14	1259	7.03	19	20.34	155	6.86	7.66	1.1	1.6	1.6	31	1	103	.10	6	0.5	0.7	20	SF4	
		14	2059	6.40	19	24.20	155	15.55	4.98	1.8	2.2	1.2	17	2	83	.10	2	0.5	0.7	16	SEC L	
		14	2354	16.04	19	23.86	155	15.15	12.08	1.8	1.7	1.1	16	3	230	.08	3	1.0	0.6	16	INT L	
		15	229	25.26	19	20.90	155	30.00	10.33	2.4	2.3	50	5	34	.12	5	0.3	0.4	46	KAO		
		15	230	44.90	19	20.78	155	30.09	9.94	1.7	2.0	1.6	33	5	48	.11	5	0.4	0.5	30	KAO	
		15	249	52.62	19	28.50	155	52.88	10.34	3.4	4.0	3.4	48	5	114	.14	4	0.5	0.4	45	KON F	
		15	1752	9.08	19	27.17	155	14.83	6.30	2.0	2.4	1.5	19	6	230	.13	3	0.7	1.2	12	INT L	
		15	1818	9.76	19	27.20	155	15.85	9.39	1.2	1.4	0.9	17	5	203	.18	2	1.5	1.0	12	INT L	

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## 1989 HVO EARTHQUAKE SUMMARY LIST

ORIGIN TIME			LAT N		LON W		DEPTH AMP		CD		GAP RMS MIN ERH			ER2 NO							
YEAR	MON	DA	HRMN	SEC	DEG MIN	DEG MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	KM	FM	RMK			
1989	DEC	16	847	6.15	19	25.78	155	16.08	11.88	2.0	1.6	1.3	21	7	138	.13	2	1.0	0.7	14	INT L
		16	929	39.15	19	27.80	155	15.51	5.61	2.0	2.3	1.4	24	10	230	.18	2	0.7	1.2	15	INT L
		16	1126	56.71	19	27.07	155	14.25	3.13	1.7	1.5	1.3	20	6	238	.13	4	0.6	0.8	14	SNC L
		16	1146	23.61	19	20.53	155	6.24	7.47	1.9	2.1	1.8	45	9	106	.15	6	0.4	0.5	37	SF4
	16	1228	52.86	19	27.14	155	15.47	10.95	1.8	2.0	1.2	22	9	213	.15	2	1.3	0.8	14	INT L	
	16	1545	15.15	19	24.42	155	0.18	6.90	2.1	2.1	1.9	47	6	140	.21	3	0.7	0.4	41	SF5	
	16	1615	49.24	19	25.84	155	16.08	13.67	2.1	2.3	1.5	23	8	141	.12	2	1.1	0.6	15	DEP L	
	16	1619	3.28	19	27.33	155	15.33	13.57	2.1	2.1	1.5	18	7	225	.10	2	1.2	0.7	14	DEP L	
	16	2058	41.83	19	28.34	155	13.90	5.85	2.0	2.1	1.5	24	9	252	.13	5	0.7	1.9	15	GLN L	
	16	2241	30.81	19	27.60	155	12.74	4.37	2.2	2.9	1.2	21	6	261	.15	6	0.9	3.4	15	GLN L	
	16	2253	45.14	19	17.98	155	27.68	9.86	1.2	1.4	26	8	75	.12	7	0.4	0.5	21	LSW		
	16	2349	59.91	19	27.91	155	14.04	9.48	2.2	2.3	1.5	22	9	247	.14	5	1.0	0.9	14	INT L	
	17	0	2	16.00	19	27.27	155	30.18	10.89	1.7	1.4	1.4	36	6	50	.14	7	0.4	0.6	30	KAO L
	17	150	9.79	19	25.30	155	19.74	6.41	2.0	2.0	1.4	37	12	50	.11	3	0.3	0.5	25	KAO	
	17	229	30.06	19	26.82	155	14.99	10.58	2.0	2.8	1.3	22	10	214	.12	3	1.0	0.6	14	INT L	
		17	456	6.92	19	26.87	155	14.79	10.67	2.4	2.8	1.7	21	10	222	.12	4	1.0	0.7	12	INT L
17		7	8	49.64	19	27.16	155	15.87	11.37	1.9	1.6	1.1	21	10	199	.11	2	1.0	0.6	13	INT L
17		819	54.07	19	24.86	155	17.45	8.25	2.0	2.5	1.2	14	1	71	.13	1	0.9	1.6	0	INT L	
17		854	39.26	19	21.25	155	18.91	3.50	1.2	1.1	1.2	14	0	81	.06	3	0.4	0.9	12	SWR	
17		1012	34.89	19	24.43	155	15.25	1.95	1.5	1.9	1.1	5	0	147	.11	2	0.9	2.5	1	SEC L	
17		1219	16.32	19	25.37	155	17.71	8.19	2.0	2.6	1.4	15	1	72	.15	0	0.8	1.6	0	INT L	
17		1423	53.65	19	23.82	155	16.91	9.67	1.7	2.3	1.0	6	1	171	.08	3	1.9	1.1	0	INT L	
17		1524	25.40	19	24.62	155	15.80	1.31	1.4	2.2	1.2	7	0	163	.12	2	0.5	0.6	2	SNC L	
17		1651	4.83	19	25.08	155	16.64	11.27	1.8	1.9	1.1	14	4	156	.13	1	1.1	1.1	1	INT L	
17		1737	14.41	19	23.19	155	18.88	7.49	1.6	0.9	9	1	223	.08	3	1.6	1.3	1	1	INT L	
17		1742	57.76	19	27.87	154	53.34	5.60	1.4	1.5	25	1	139	.11	3	0.6	1.0	11	LER		
17		21	5	3.21	19	23.51	155	17.09	6.06	2.0	1.3	19	3	51	.11	0	0.5	0.8	18	INT L	
17		22	5	35.77	19	58.19	155	22.82	8.69	2.2	2.5	1.9	38	5	214	.16	10	0.7	0.4	36	KEA
18		028	59.03	19	25.25	155	14.86	7.90	1.7	0.9	20	3	172	.14	1	0.9	0.7	17	INT L		
18		223	50.11	19	27.33	154	52.88	4.79	2.1	2.1	1.8	40	5	146	.12	3	0.6	1.0	36	SLE	
18		254	58.23	19	24.80	155	16.36	6.66	1.5	2.0	1.0	18	2	98	.12	1	0.7	0.6	16	INT L	
18	737	46.22	19	25.73	155	13.97	12.21	2.1	3.0	1.6	19	2	184	.12	2	1.2	0.9	17	SF2 L		
18	931	33.61	19	24.41	155	16.15	8.98	1.7	1.1	17	2	89	.15	1	0.8	1.0	15	INT L			
18	946	10.59	19	15.29	155	12.58	6.99	1.4	1.3	28	7	240	.09	4	0.5	0.7	25	SF2			
18	10	4	33.94	19	28.10	154	53	5.34	2.4	2.3	2.1	50	6	120	.13	3	0.4	0.6	45	LER	
	18	11	3	12.64	19	45.39	156	10.01	37.41	2.8	3.0	2.3	50	6	254	.16	35	1.2	0.9	46	HUA
	18	1421	16.73	19	24.48	155	16.53	7.22	1.9	2.3	1.3	13	3	121	.15	1	0.9	1.3	0	INT L	
	18	1513	19.95	19	20.29	155	12.90	7.49	1.4	1.7	1.2	32	5	68	.10	4	0.4	0.6	19	SF2	
	18	1624	46.23	19	49.82	156	16.55	2.71	1.8	1.9	28	0	301	.17	48	8.6	9.3	20	HUA		
	18	1913	43.60	19	25.42	155	15.76	8.78	1.9	2.1	1.2	19	3	145	.06	3	0.7	0.4	18	INT L	
	18	2047	18.23	19	23.64	155	30.24	9.99	1.4	1.3	41	4	39	.11	5	0.4	0.5	37	KAO		
	18	2224	14.20	19	26.22	155	13.68	1.96	1.7	1.3	22	3	199	.15	3	0.6	0.8	19	GLN L		
	19	041	31.51	19	25.36	155	16.51	11.58	1.9	2.0	1.1	20	3	111	.11	1	0.9	0.6	17	INT L	
	19	1250	54.86	19	25.32	155	16.87	10.57	1.9	2.3	1.1	22	4	100	.12	1	0.8	0.6	17	INT L	
	19	220	51.40	19	35.42	155	15.39	9.13	1.9	2.4	1.2	20	3	153	.08	2	0.8	0.6	17	INT L	
	19	225	51.40	19	35.42	155	15.39	9.13	1.9	2.4	1.2	20	3	153	.08	2	0.8	0.6	17	INT L	
	19	225	51.40	19	35.42	155	15.39	9.13	1.9	2.4	1.2	20	3	153	.08	2	0.8	0.6	17	INT L	

## 1989 HVO EARTHQUAKE SUMMARY LIST

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ORIGIN TIME		LAT N		LON W		DEPTH		AMP		DUR		CD		GAP		RMS		MIN		ERH		ERZ		NO		
YEAR	MON	DA	HRMN	SEC	DEG	MIN	DEG	MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	RM	FN	RMK	RM	FN	RMK	RM	FN	RMK
1989	DEC	19	316	6.52	19	24.29	155	16.76	9.93	1.8	2.1	1.1	18	3	79	.11	1	0.7	0.8	16	INT	L				
19	435	49.09	19	22.58	155	2.50	8.04	1.7	1.6	1.5	43	5	124	.17	4	0.5	0.4	39	SF5							
19	439	49.90	19	24.87	155	15.17	6.12	1.9	2.3	1.3	20	3	160	.10	2	0.7	0.6	18	INT	L						
19	541	28.28	19	24.99	155	16.45	9.31	1.7	1.6	1.0	18	5	130	.13	2	0.9	0.5	13	INT	L						
19	721	31.34	19	20.70	155	22.41	10.59	1.4	1.6	1.2	33	6	67	.11	2	0.4	0.5	27	SWR							
19	915	7.22	19	25.19	155	15.38	8.70	2.1	2.3	1.3	21	4	142	.13	2	0.9	0.6	17	INT	L						
19	959	31.14	19	24.12	155	16.96	11.63	2.1	2.3	1.3	19	3	73	.12	1	0.8	0.9	17	INT	L						
19	1013	29.32	19	24.48	155	17.07	10.32	1.9	2.1	1.2	18	2	76	.12	1	0.8	0.9	16	INT	L						
19	12	4	46.19	19	25.28	155	15.52	8.58	2.0	2.2	1.2	21	4	141	.12	2	0.9	0.6	17	INT	L					
19	1251	44.49	19	24.18	155	16.45	9.71	1.8	2.1	1.1	18	3	87	.09	1	0.8	0.7	16	INT	L						
19	1354	9.41	19	24.52	155	16.90	11.69	2.3	1.2	1.9	7	99	.12	1	1.2	0.6	1	INT	L							
19	1514	52.60	19	27.97	155	12.47	13.81	2.2	2.1	1.4	11	2	279	.08	7	1.6	1.0	0	DEP	L						
19	1528	33.83	19	21.42	155	4.92	5.45	1.6	1.7	1.7	34	1	88	.13	4	0.5	1.3	19	SF5							
19	1556	37.12	19	25.21	155	16.81	7.67	1.8	2.2	1.3	19	4	155	.14	1	0.9	0.6	4	INT	L						
19	1626	5.62	19	26.77	155	16.07	13.44	2.1	2.3	1.2	14	5	241	.13	4	2.5	0.9	1	DEP	L						
19	17	6	22.93	19	26.08	155	15.88	11.44	2.0	2.3	1.3	18	4	156	.13	3	1.0	0.8	3	INT	L					
19	1745	22.42	19	25.26	155	16.34	11.07	1.8	1.7	1.0	19	6	114	.08	1	1.1	0.5	1	INT	L						
19	1821	42.90	19	26.24	155	18.16	8.72	1.8	2.3	1.2	15	3	102	.12	2	0.8	0.8	17	INT	L						
19	1912	13.67	19	24.29	155	16.50	11.40	1.9	2.3	1.2	21	4	181	.14	1	0.9	0.8	17	INT	L						
19	1948	6.16	19	25.05	155	15.88	9.32	1.7	2.0	1.0	21	4	119	.14	2	0.9	0.5	17	INT	L						
19	2040	12.66	19	26.60	155	16.12	14.35	1.9	1.9	1.3	12	3	162	.12	2	2.1	1.0	1	DEP	L						
19	2124	17.88	19	24.96	155	17.28	10.60	1.5	1.7	1.1	19	4	84	.12	0	0.9	0.6	15	INT	L						
19	2141	34.42	19	24.78	155	16.91	11.57	2.0	1.3	1.9	4	88	.07	0	0.8	0.5	17	INT	L							
19	23	4	28.68	19	24.88	155	16.68	12.27	1.8	1.0	20	4	95	.10	1	0.9	0.7	16	INT	L						
20	056	17.45	19	25.25	155	14.35	7.13	1.8	2.1	1.2	20	4	196	.14	1	0.9	0.9	17	INT	L						
20	148	14.47	19	24.59	155	16.10	8.56	1.7	1.9	1.0	22	4	95	.14	2	0.7	0.6	18	INT	L						
20	232	59.34	19	25.05	155	16.55	10.50	1.7	1.6	0.9	18	4	102	.14	1	1.0	0.7	14	INT	L						
20	335	14.31	19	24.17	155	16.42	8.86	1.7	2.1	1.1	21	5	78	.09	1	0.7	0.5	17	INT	L						
20	429	27.65	19	20.73	155	11.84	8.28	1.4	1.5	1.6	45	5	71	.13	4	0.5	0.4	40	SF3							
20	442	44.94	19	24.17	155	16.45	9.51	1.7	1.6	1.0	20	4	78	.12	1	0.8	0.7	16	INT	L						
20	629	15.39	19	25.41	155	14.49	8.80	2.1	2.0	1.4	20	2	168	.12	1	0.9	0.8	18	INT	L						
20	8	1	23.10	19	16.89	155	20.29	7.77	1.2	1.1	31	2	137	.10	4	0.5	0.7	30	SWR							
20	922	45.63	19	24.56	155	15.98	11.52	2.0	2.1	1.2	20	4	96	.13	2	1.0	0.6	17	INT	L						
20	1022	18.95	19	23.53	155	17.30	8.45	1.9	1.2	1.4	5	177	.10	1	1.0	0.6	10	INT	L							
20	1112	23.12	19	23.26	155	18.06	8.96	1.7	1.6	1.0	20	4	56	.11	2	0.6	1.0	16	INT	L						
20	1232	44.52	19	24.43	155	15.61	11.09	1.8	1.7	1.2	20	3	94	.09	2	0.8	0.6	17	INT	L						
20	1552	27.64	19	17.16	155	13.22	6.30	1.2	1.3	21	4	152	.09	1	0.6	0.6	18	SF2								
20	17	7	15.17	19	23.39	155	16.93	11.26	1.8	1.6	1.0	16	2	59	.13	0	0.8	1.1	16	INT	L					
20	1754	59.01	19	21.30	155	30.04	9.86	1.2	1.2	34	4	46	.12	5	0.4	0.6	31	KA0								
21	019	48.22	19	25.51	155	15.30	7.40	2.1	2.6	1.2	19	4	152	.14	2	1.0	0.8	15	INT	L						
21	021	50.57	19	14.96	155	22.73	7.74	1.2	0.9	20	5	191	.09	3	0.4	0.7	17	SWR								
21	439	5.57	19	15.26	155	16.10	6.45	2.1	2.5	2.0	52	6	169	.13	6	0.4	0.6	46	SF1							
21	543	29.79	18	51.61	155	15.44	11.08	2.3	2.9	1.9	23	2	304	.11	40	1.5	1.6	23	LOI	L						
21	842	35.08	19	24.44	155	16.33	15.72	1.7	1.4	1.5	42	3	63	.09	1	0.5	0.3	39	DEP							
21	1830	1.85	19	25.51	155	16.84	2.59	1.3	1.5	1.1	9	0	106	.08	1	0.4	0.6	0	SNC	L						

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## 1989 HVO EARTHQUAKE SUMMARY LIST

ORIGIN TIME		LAT N		LON W		DEPTH		AMP		DUR		CD		GAP		RMS		MIN		ERH		ERZ		NO			
YEAR	MON	DA	HRMN	SEC	DEG	MIN	DEG	MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	FN	RMK	RM	FN	RMK	RM	FN	RMK		
1989	DEC	22	438	41.46	19	23.90	155	15.49	3.02	1.9	1.7	1.3	31	9	70	.10	2	0.2	0.3	22	SEC						
	22	723	34.34	19	23.11	155	15.45	11.64	2.1	2.3	1.4	18	2	135	.12	2	1.0	0.6	16	INT	L						
	22	846	58.31	19	25.76	155	16.00	7.67	1.6	1.3	1.0	17	2	141	.12	2	0.8	0.7	16	INT	L						
	22	1430	8.76	19	23.10	155	30.52	9.16	2.3	2.5	2.3	47	4	50	.12	5	0.4	0.5	44	KA0							
	22	16	2	31.00	19	23.21	155	2.64	7.43	1.7	1.7	1.5	33	2	123	.15	3	0.6	1.0	31	SF5						
	22	17	2	27.03	19	19.86	155	12.01	8.76	1.9	2.5	1.9	44	6	83	.11	5	0.4	0.3	43	SF3						
	22	1719	41.37	19	22.54	155	16.75	30.13	2.2	2.0	2.0	34	2	44	.09	2	0.8	1.2	32	DEP							
	22	1832	33.69	19	20.09	155	10.97	8.23	1.2	1.4	38	4	85	.12	4	0.4	0.5	35	SF3								
	22	20	7	30.85	19	20.65	155	7.16	7.90	1.6	1.7	1.9	51	5	93	.12	5	0.3	0.4	48	SF4						
	22	2122	1.24	19	25.35	155	15.37	2.55	1.3	1.3	1.1	21	4	150	.12	2	0.4	0.3	17	SNC	L						
23	046	44.01	19	19.88	155	7.67	7.92	1.2	1.4	1.6	45	5	97	.12	5	0.3	0.4	43	SF4								
	23	159	27.72	19	20.95	155	3.83	7.41	1.4	1.7	43	4	88	.12	3	0.5	0.4	40	SF5								
	23	241	29.48	19	25.88	155	19.14	7.12	1.9	1.9	1.2	26	4	90	.10	3	0.5	0.7	21	KA0							
	23	4	20.10	19	26.01	155	15.27	10.63	1.8	1.7	1.2	19	4	182	.16	3	1.3	0.8	18	INT	L						
	23	12	2	10.76	19	20.18	155	11.91	7.65	1.7	1.3	1.5	35	5	78	.12	5	0.4	0.5	30	SF3						
	23	1518	3.50	19	25.61	155	16.13	6.28	2.0	2.0	1.7	23	4	78	.12	2	0.5	0.5	22	INT	L						
	23	1542	23.05	19	20.74	155	6.91	7.40	1.9	2.1	1.8	43	2	95	.13	5	0.5	0.7	43	SF4							
	23	1615	56.84	19	25.37	155	16.33	10.91	1.9	1.7	1.1	18	1	317	.10	1	0.9	1.0	17	INT	L						
	23	1730	56.87	19	27.37	155	6.65	14.00	2.2	2.2	1.4	17	3	132	.23	14	2.5	2.6	1	DEP	L						
	23	1922	35.02	19	24.47	155	15.90	11.02	2.1	2.1	1.5	13	2	99	.12	2	0.9	0.9	4	INT	L						
23	2044	47.39	19	25.79	155	16.44	12.24	2.3	2.7	1.5	25	6	125	.11	2	0.8	0.6	10	INT	L							
	23	2226	13.57	19	26.99	155	15.83	15.00	2.1	1.8	1.5	11	2	193	.10	2	1.7	1.2	6	DEP	L						
	24	1020	30.41	19	16.01	155	29.37	10.24	1.3	1.4	2.3	23	2	59	.12	2	0.4	1.0	14	LSW	L						
	24	1626	39.61	19	19.88	155	11.78	8.95	2.5	2.9	2.7	54	7	86	.11	5	0.4	0.3	53	SF3							
	24	17	0	16.54	19	23.89	155	14.84	7.23	2.4	2.7	1.8	16	0	86	.30	2	1.3	1.8	0	INT	L					
	24	2119	24.53	20	23.79	156	3.41	35.98	3.4	3.7	2.9	30	6	314	.11	42	0.5	0.6	53	KOH							
	25	048	4.53	19	26.25	155	15.61	14.63	1.7	1.8	1.1	12	2	179	.13	3	2.1	0.8	0	DEP	L						
	25	711	48.24	19	18.03	155	29.37	9.88	1.2	1.2	35	5	59	.14	5	0.3	0.5	31	LSW								
	25	810	42.90	19	24.59	155	16.96	6.89	1.5	2.0	0.8	17	2	83	.12	1	0.6	0.6	16	INT	L						
	25	925	34.53	19	25.44	155	14.54	9.36	2.3	1.6	1.6	1	194	.13	1	1.1	0.8	15	INT	L							
25	926	27.50	19	24.42	155	16.73	10.66	2.1	2.1	1.4	21	4	83	.16	1	0.8	0.7	17	INT	L							
	25	1322	10.83	20	0.23	155	25.22	8.49	2.7	2.8	2.4	39	6	201	.10	15	0.4	0.5	35	KEA							
	25	1821	39.26	19	18.47	155	51.19	5.17	2.5	1.8	1.8	33	2	179	.16	5	0.7	1.3	15	KON							
	25	2239	50.39	19	19.41	155	51.95	5.49	2.2	1.5	1.6	31	0	178	.13	6	0.6	0.6	12	KON							
	25	2329	59.64	19	19.81	155	25.62	9.65	2.5	2.5	2.0	2.1	31	0	257	.07	13	1.7	0.5	17	KEA						
	25	2333	22.90	19	19.61	155	7.04	6.68	1.6	1.5	2.9	2	116	.10	4	0.4	1.0	16	SF4								
	26	125	32.44	19	24.72	155	17.30	12.97	2.2	2.3	1.4	24	4	47	.13	1	0.7	0.6	3	INT	L						
	26	536	0.28	19	12.06	155	30.49	10.18	1.4	1.5	2.8	1	146	.12	6	0.5	1.1	12	LSW								
	26	830	35.66	19	48.72	156	11.25	7.51	2.8	3.1	2.3	48	6	259	.20	39	0.9	0.6	34	HUA							
	26	1351	22.54	19	23.44	155	17.93	6.89	2.1	2.5	1.3	17	2	53	.08	2	0.4	0.8	17	INT	L						
26	1358	2.61	19	17.62	155	27.87	10.30	2.0	1.4	3.1	5	47	.11	6	0.4	0.7	28	LSW									
	26	22	1	48.99	19	20.14	155	7.63	7.99	1.9	1.8	48	7	94	.13	5	0.3	0.4	42	SF4							
	27	1	51.12	19	19.79	155	6.94	7.54	2.1	2.0	4.8	5	114	.13	5	0.4	0.4	46	SF4								
	27	1	51.92	19	20.17	155	6.95	6.65	1.6	1.7	1.5	31	2	105	.12	6	0.4	1.0	33	SF4							
	27	127	3.28	19	16.82	155	29.68	9.70	1.2	1.4	3.3	6	61	.12	3	0.4	0.5	29	LSW								
	27	127	3.28	19	16.82	155	29.68	9.70	1.2	1.4	3.3	6	61	.12	3	0.4	0.5	29	LSW								

## 1989 HVO EARTHQUAKE SUMMARY LIST

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ORIGIN TIME		LAT N		ION W		DEPTH AMP DUR		CD		GAP RMS MIN ERH		ERZ NO											
YEAR	MON	DA	HR	MIN	SEC	DEG	MIN	RM	MAG	MAG	NR	NS	DEG	SEC	DIS	RM	RM	FM	RMK				
1989	DEC	27	149	10	49	19	19.84	155	9.36	6.98	1.2	1.1	28	5	83	10	4	0.3	0.5	28	SE3		
		27	4	4	046	19	22	52	155	2.40	8.31	0.8	1.2	1.4	33	5	138	16	4	0.7	0.4	29	SE5
		27	443	52	03	19	11.35	155	40.93	1.95	2.6	3.0	2.4	49	4	119	20	9	0.5	1.0	46	LSW	
		27	524	1	90	19	22	50	155	14.07	3.12	1.5	1.5	1.4	24	6	88	09	2	0.4	0.3	20	SEC
		27	1455	41	88	19	9.76	155	33.65	9.86	2.5	3.0	2.5	37	3	137	13	11	0.4	0.6	27	LSW F	
		27	1643	12	68	19	9.72	155	33.61	9.35	3.1	3.6	3.2	43	4	137	13	11	0.4	0.6	41	LSW F	
		27	1658	1	25	19	29	40	155	23.75	10.15	1.8	1.6	1.3	35	8	82	12	1	0.4	0.6	22	RAO
		27	2313	17	11	19	19.68	155	12.38	9.58	5.3	5.1	4.6	1	83	10	5	0.4	0.3	49	SE2 F		
		27	2316	35	91	19	19.62	155	12.27	9.94	3.8	4.4	4.4	55	7	85	10	5	0.3	0.3	52	SE3 F	
		27	2323	10	69	19	20.74	155	11.39	9.21	1.8	1.7	4.0	6	72	13	4	0.4	0.5	34	SE3		
2020	DEC	27	2330	52	30	19	20.29	155	13.33	6.85	1.4	1.5	1.4	38	4	63	14	4	0.4	0.5	36	SE2	
		28	249	1	93	19	9.24	155	33.05	8.14	2.3	2.6	2.1	45	4	127	17	9	0.4	0.8	42	LSW	
		28	8	9	37	45	19	30.81	156	24.90	8.94	2.9	2.1	2.0	20	2	278	09	52	1.3	1.1	11	DIS
		28	1850	58	15	19	9.52	155	33.50	9.02	2.4	2.7	2.3	35	2	138	12	0.4	0.8	26	LSW		
		28	1950	5	53	19	29.21	155	26.14	6.19	1.8	1.2	1.1	33	5	98	11	5	0.3	1.0	18	RAO	
		28	2017	57	54	19	20.32	155	17.53	33.55	2.9	3.7	3.3	65	16	54	11	0	0.5	0.6	51	DEP F	
		28	2027	22	38	19	22.00	155	17.35	25.05	2.7	3.2	2.0	9	0	112	12	3	3.4	10.9	0	DEP L	
		28	2043	23	17	19	18.95	155	16.94	12.49	1.8	1.6	1.1	9	3	295	26	7	4.0	3.7	1	SE1 L	
		28	2050	0	83	19	25.12	155	15.40	6.15	1.6	1.8	0.9	19	4	137	12	2	0.8	0.6	17	INT L	
		28	2058	8	37	19	24.72	155	14.67	6.03	1.7	2.0	1.0	21	4	128	12	1	0.7	0.9	17	INT L	
2021	DEC	28	2112	25	32	19	25.12	155	16.50	10.74	2.0	2.1	1.2	22	4	105	15	1	0.9	0.6	18	INT L	
		28	2128	37	08	19	24.43	155	17.99	9.78	2.0	2.5	1.2	20	5	58	13	2	0.7	0.6	15	INT L	
		28	2135	36	54	19	24.36	155	17.08	8.32	2.2	2.9	1.5	22	4	76	14	1	0.7	0.7	18	INT L	
		28	2148	13	27	19	24.26	155	17.06	9.67	1.8	2.4	1.1	21	4	75	12	1	0.7	0.8	17	INT L	
		28	22	6	32	78	19	24.83	155	16.08	10.81	2.1	2.4	1.3	20	3	105	14	2	1.0	0.7	17	INT L
		28	2218	34	71	19	25.35	155	17.15	8.90	1.6	1.1	20	3	94	12	1	0.8	0.5	6	INT L		
		28	2229	48	56	19	26.73	155	17.91	8.79	2.0	2.4	1.2	15	5	118	20	3	1.5	0.9	6	INT L	
		28	2241	13	81	19	23.66	155	17.29	12.53	2.1	2.2	1.2	17	4	57	28	1	1.4	2.3	5	INT L	
		28	2254	22	02	19	23.85	155	17.36	10.53	2.1	1.3	18	5	86	31	1	1.6	1.4	4	INT L		
		28	23	8	3	05	19	23.99	155	16.51	15.84	2.2	2.4	1.2	19	4	73	16	0	1.3	1.0	5	DEP L
2022	DEC	28	2317	47	69	19	26.42	155	17.68	10.11	1.9	2.0	1.1	15	3	116	14	2	1.4	0.7	6	INT L	
		28	2322	40	52	19	23.16	155	2.87	7.75	1.1	1.4	1.6	39	4	118	15	3	0.4	0.6	23	SE5	
		28	2329	44	05	19	25.66	155	16.70	12.21	2.1	2.3	1.2	16	4	113	15	2	1.3	0.9	3	INT L	
		28	2342	41	72	19	25.48	155	16.61	11.95	2.1	2.4	1.2	13	4	111	15	2	1.6	1.1	3	INT L	
		29	0	23	51	19	25.47	155	16.40	10.33	2.1	2.3	1.3	15	1	118	07	1	0.9	0.7	2	INT L	
		29	0	1	45	78	19	27.25	155	16.98	12.63	2.2	2.3	1.2	18	4	111	13	1	1.5	1.2	3	INT L
		29	015	52	34	19	26.24	155	16.41	11.75	2.0	2.0	1.2	19	5	137	16	3	1.6	0.6	3	INT L	
		29	028	34	26	19	25.52	155	17.36	10.48	2.0	2.3	1.2	15	5	91	11	0	1.2	0.9	2	INT L	
		29	049	23	84	19	24.24	155	17.81	10.29	2.1	1.2	17	2	59	14	2	0.9	0.9	17	INT L		
		29	049	36	37	19	20.21	155	8.08	7.11	2.1	2.3	2.1	43	1	84	13	5	0.5	0.6	46	SE4	
2023	DEC	29	1	0	37	46	19	24.31	155	29.58	9.82	1.2	1.3	39	3	31	12	5	0.4	0.5	36	RAO	
		29	1	1	50	45	19	26.02	155	16.04	8.83	1.8	2.1	1.1	19	4	147	12	3	0.9	0.5	17	INT L
		29	127	18	61	19	24.65	155	17.80	11.16	2.1	2.3	1.3	21	4	55	12	1	0.7	0.8	17	INT L	
		29	152	19	12	19	25.13	155	16.89	9.30	2.1	1.3	21	4	96	09	0	0.6	0.4	18	INT L		
		29	2	4	25	04	19	25.47	155	15.84	8.58	2.0	2.0	1.2	19	3	137	15	2	0.9	0.6	18	INT L
		29	2	4	25	04	19	25.47	155	15.84	8.58	2.0	2.0	1.2	19	3	137	15	2	0.9	0.6	18	INT L
		29	2	4	25	04	19	25.47	155	15.84	8.58	2.0	2.0	1.2	19	3	137	15	2	0.9	0.6	18	INT L
		29	2	4	25	04	19	25.47	155	15.84	8.58	2.0	2.0	1.2	19	3	137	15	2	0.9	0.6	18	INT L
		29	2	4	25	04	19	25.47	155	15.84	8.58	2.0	2.0	1.2	19	3	137	15	2	0.9	0.6	18	INT L
		29	2	4	25	04	19	25.47	155	15.84	8.58	2.0	2.0	1.2	19	3	137	15	2	0.9	0.6	18	INT L

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## 1989 HVO EARTHQUAKE SUMMARY LIST

ORIGIN TIME			LAT N		LON W		DEPTH AMP DUR			CD			GAP RMS MIN ERH			ERZ NO							
YEAR	MON	DA	HR	MIN	SEC	DEG	MIN	DEG	MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	RM	KM	FM	RMK		
1989	DEC	29	220	3	78	19	24.25	155	17.40	11.23	2.1	2.3	1.2	17	2	52	15	1	0.9	1.1	17	INT L	
		29	235	41	17	19	24.24	155	17.19	10.08	2.0	2.0	1.2	21	3	65	15	1	0.7	0.8	18	INT L	
		29	254	58	37	19	23.64	155	17.95	10.22	2.0	2.1	1.2	21	4	49	16	2	0.7	1.1	17	INT L	
		29	319	39	08	19	25.10	155	16.09	10.89	2.1	1.3	18	1	115	12	2	0.7	0.8	18	INT L		
		29	336	10	15	19	25.61	155	16.22	9.23	2.0	2.4	1.2	20	4	128	10	2	0.7	0.5	17	INT L	
		29	355	52	08	19	25.53	155	16.11	9.31	2.1	2.2	1.3	21	4	129	10	2	0.8	0.5	18	INT L	
		29	425	5	07	19	24.39	155	17.08	10.16	2.1	2.6	1.3	18	2	75	12	1	0.8	0.9	16	INT L	
		29	432	1	24	19	20.05	155	29.18	11.82	2.8	3.1	2.6	52	7	38	11	5	0.3	0.4	44	RAO	
		29	451	15	28	19	24.98	155	17.17	8.35	2.0	2.4	1.3	13	1	87	13	0	0.9	1.0	2	INT L	
		29	533	58	20	19	25.23	155	17.38	6.08	1.8	1.3	12	1	86	12	0	0.7	1.3	2	INT L		
		29	621	36	88	19	21.92	155	18.37	11.21	2.2	2.4	1.4	11	3	237	20	4	2.4	1.5	4	SWR L	
		29	7	26	08	19	25.70	155	17.47	6.99	2.0	2.3	1.3	14	2	90	08	1	0.7	0.9	4	INT L	
		29	715	46	18	19	19.87	155	11.76	7.27	1.6	1.5	1.6	29	2	90	13	6	0.5	0.9	21	SF3 L	
		29	736	52	90	19	16.18	155	20.70	18.88	2.4	2.0	1.2	8	0	319	15	14	12.2	10.1	0	DEP L	
		29	758	32	93	19	20.13	155	10.56	7.79	1.8	1.8	1.7	41	3	84	10	4	0.4	0.5	33	SF3	
		29	8	10	87	19	20.06	155	10.44	6.64	1.1	1.3	12	1	101	12	4	0.6	1.4	7	SF3		
		29	8	2	18	15	19	20.06	155	10.64	8.53	1.4	1.2	9	1	96	03	4	0.8	1.6	6	SF3	
		29	8	3	47	48	19	19.88	155	10.67	7.88	1.2	22	5	95	10	4	0.5	0.8	19	SF3		
		29	8	4	5	38	19	21.11	155	9.08	6.07	1.1	9	133	23	2	1.3	2.3	9	SF4			
		29	813	21	18	19	25.68	155	15.50	8.26	2.1	2.5	1.3	18	3	159	08	3	0.8	0.5	16	INT L	
		29	848	41	62	19	25.85	155	17.04	8.19	2.3	1.5	21	1	67	15	1	0.6	0.7	2	INT L		
		29	854	12	65	19	25.86	155	17.37	8.01	1.8	2.2	1.4	12	5	266	12	1	1.9	0.9	1	INT L	
		29	856	10	41	19	24.36	155	15.86	11.33	1.9	2.3	1.4	12	4	112	09	2	1.6	0.7	1	INT L	
		29	859	1	29	19	21.90	155	17.64	4.76	1.7	2.3	1.2	14	5	233	13	3	0.9	1.5	3	SWR L	
		29	9	7	20	11	19	23.51	155	17.62	7.39	1.8	2.7	1.3	14	2	140	17	2	1.0	1.4	4	INT L
		29	936	38	31	19	25.93	155	16.67	9.96	1.7	1.9	1.0	16	4	119	08	2	1.1	0.5	12	INT L	
		29	945	3	52	19	25.96	155	15.56	7.88	1.6	1.9	1.0	13	4	167	09	3	0.9	1.3	10	INT L	
		29	1149	28	21	19	25.52	155	15.88	8.09	1.8	2.3	1.2	19	6	137	07	2	0.7	0.6	13	INT L	
		29	1210	32	81	19	25.86	155	15.57	8.62	1.8	2.1	1.1	18	6	163	10	3	1.0	0.9	12	INT L	
		29	1236	25	09	19	26.10	155	15.77	8.92	1.7	1.9	1.0	14	4	163	06	3	0.9	0.6	9	INT L	
		29	1331	45	79	19	24.52	155	17.68	10.51	1.9	2.3	1.2	16	5	110	25	1	1.7	1.1	5	INT L	
		29	1410	7	73	19	21.70	155	17.97	4.20	1.8	2.1	1.2	17	5	189	12	4	0.5	1.1	1	SWR L	
		29	1458	38	48	19	22.25	155	17.45	8.22	1.8	2.1	1.2	14	4	188	11	2	1.1	1.8	3	INT L	
		29	1541	58	62	19	24.31	155	17.43	11.62	1.8	1.0	11	3	102	14	2	1.2	1.1	1	INT L		
		29	1639	51	13	19	23.82	155	20.00	10.28	2.1	2.6	1.3	14	4	241	17	5	2.4	1.0	6	RAO L	
		29	17	8	30	98	19	19.46	155	11.81	8.90	1.6	1.7	1.5	26	2	93	07	5	0.5	0.8	19	SF3
		29	18	4	8	61	19	25.64	155	16.82	7.74	2.0	2.3	1.3	20	4	109	10	1	0.6	0.6	2	INT L
		29	1842	8	42	19	19.41	155	11.64	6.63	1.5	1.3	24	2	96	08	5	0.5	0.9	19	SF3		
		29	1855	31	85	19	23.62	155	18.38	3.80	1.5	1.8	1.2	12	0	98	13	2	0.6	0.8	3	SSC L	
		29	191	0	3	31	19	26.08	155	18.25	11.37	1.9	1.4	17	1	97	18	2	1.2	2.5	0	INT L	
		29	1928	50	43	19	24.67	155	18.09	10.50	1.7	2.0	1.1	16	4	67	12	2	1.2	0.9	4	INT L	
		29	1941	25	77	19	24.55	155	16.67	9.63	1.8	2.1	1.2	15	4	86	16	1	1.5	1.1	2	INT L	
		29	20	9	56	75	19	24.99	155	15.89	12.90	1.8	1.0	10	3	115	10	3	1.1	0.8	2	INT L	
		29	2052	7	15	19	24.34	155	18.57	12.50	1.8	1.9	1.2	13	3	89	12	2	1.4	0.9	0	INT L	
		29	2050	8	09	19	23.33	155	19.53	12.52	2.0	1.9	1.1	15	4	233	11	1	1.8	1.0	1	RAO L	
		29	2050	8	09	19	23.33	155	19.53	12.52	2.0	1.9	1.1	15	4	233	11	1	1.8	1.0	1	RAO L	
		29	2050	8	09	19	23.33	155	19.53	12.52	2.0	1.9	1.1	15	4	233	11	1	1.8	1.0	1	RAO L	
		29	2050	8	09	19	23.33	155	19.53	12.52	2.0	1.9	1.1	15	4	233	11	1	1.8	1.0	1	RAO L	
		29	2050	8	09	19	23.33	155	19.53	12.52	2.0	1.9	1.1	15	4	233	11	1	1.8	1.0	1	RAO L	
		29	2050	8	09	19	23.33	155	19.53	12.52	2.0	1.9	1.1	15	4	233	11	1	1.8	1.0	1	RAO L	

1989 HVO EARTHQUAKE SUMMARY LIST 111

YEAR	MON	DA	HR	MIN	SEC	LAT	N	DEG	MIN	ION	W	DEPTH	AMP	DUR	CD	MAG	MAG	NR	NS	DEG	RMS	MIN	ERH	ERZ	NO	
												KM	KM										KM	KM	FM	RMK
1989	DEC	29	2229	49.00	19	25.03		155	16.87	8.29	1.9	2.2	1.2	17	1	95	.11	0	0.7	0.9	16	INT	L			
29	2346	54.36	19	25.89		155	16.70	9.95	1.8	2.0	1.1	20	4	118	.12	2	0.9	0.4	17	INT	L					
30	052	11.07	19	22.97		155	17.83	5.47	1.5	1.5	1.0	9	2	97	.09	4	0.6	1.6	9	INT	L					
30	151	0.94	19	24.59		155	16.63	11.73	2.0	2.6	1.2	19	4	87	.11	1	0.8	0.7	15	INT	L					
30	3	42.13	19	26.84		155	29.97	9.76	2.1	2.0	1.6	44	7	42	.13	6	0.3	0.5	38	RAO						
30	435	1.74	19	23.76		155	17.35	9.44	2.0	2.7	1.0	16	2	56	.12	2	0.6	0.9	14	INT	L					
30	523	3.06	18	56.42		155	19.90	13.93	2.1	1.8	1.8	43	7	244	.12	28	0.6	0.8	36	LOI						
30	542	21.62	19	10.40		155	41.88	4.78	2.5	2.3	1.8	40	8	130	.22	12	0.5	3.6	33	LSW						
30	710	35.48	19	24.93		155	16.85	12.15	1.8	1.1	1.5	2	93	.11	0	1.0	0.7	13	INT	L						
30	1014	25.15	19	26.72		155	20.10	5.04	2.3	1.7	1.3	35	7	103	.14	2	0.4	0.6	27	RAO						
30	1150	49.40	19	25.01		155	16.56	9.88	2.0	2.7	1.4	19	4	101	.11	1	0.9	0.6	15	INT	L					
30	1316	47.24	19	24.47		155	31.93	7.16	2.2	2.4	1.8	31	5	39	.14	2	0.5	0.6	26	RAO						
30	1335	14.28	19	24.32		155	31.75	7.05			1.1	16	3	89	.10	2	0.6	0.8	13	RAO						
30	1335	45.39	19	24.49		155	32.64	7.33	2.0	2.0	1.7	22	2	42	.10	1	0.4	0.6	21	MLO						
30	1437	0.39	19	25.00		155	15.85	7.22		1.7	1.0	13	2	117	.08	2	0.9	0.5	11	INT	L					
30	1822	45.17	19	22.36		155	29.73	9.79	2.2	2.3	2.1	45	4	34	.12	4	0.4	0.4	41	RAO						
30	1917	16.73	19	24.12		155	16.12	10.81	1.9		1.2	20	3	79	.11	1	0.8	0.7	17	INT	L					
30	2153	11.01	19	23.11		155	6.17	2.21		1.8	1.1	9	1	118	.09	3	0.6	0.4	9	SME						
30	2210	57.74	19	19.80		155	11.80	6.54	1.4	1.5	1.4	40	7	87	.13	5	0.4	0.5	34	SF3						
30	2254	23.50	19	24.88		155	16.09	4.47	1.4	1.8	1.0	18	2	106	.10	2	0.6	0.5	16	SNC	L					
30	23	7	8.14	20	52.84		156	14.58	24.18		2.3	2.1	30	5	334	.13	97	2.6	4.7	31	DIS					
30	2338	28.46	19	28.85		155	27.74	5.51	2.0	1.6	1.2	33	5	54	.13	6	0.3	1.3	29	RAO						
31	657	32.49	19	24.77		155	16.31	8.12	2.2	2.5	1.4	20	3	98	.10	1	0.7	0.5	17	INT	L					
31	7	6	17.23	19	19.94		155	11.98	7.61	2.6		2.7	52	5	82	.14	5	0.3	0.4	50	SF3					
31	13	1	54.33	19	24.67		155	17.23	10.14	1.8	2.0	1.1	18	2	53	.13	1	0.9	1.1	16	INT	L				
31	1424	51.20	19	19.27		155	12.82	7.55	1.4	1.8	1.6	46	6	84	.13	4	0.4	0.4	40	SF2						
31	1851	31.66	20	53.03		155	58.01	16.60		2.6	2.4	27	5	340	.18	86	2.4	19.3	23	DIS	*					
31	1858	16.74	19	25.13		155	15.85	11.96	1.8	2.2	1.2	18	2	123	.10	2	0.9	0.7	16	INT	L					
31	1942	55.18	19	20.20		155	11.88	7.30	2.3	2.7	2.2	51	4	79	.14	5	0.4	0.4	50	SF3						
31	2156	1.00	19	25.30		155	16.12	10.18	1.7	1.9	1.1	16	2	121	.10	2	0.9	0.5	15	INT	L					

Table 6.

## 1989 HVO EARTHQUAKE SUMMARY LIST M&gt;=3.0

YEAR	MON	ORIGIN TIME			LAT N		LON W		DEPTH AMP DUR				GAP RMS MIN ERH				ERZ NO			
		DA	HRMN	SEC	DEG	MIN	DEG	MIN	KM	MAG	MAG	NR	NS	DEG	SEC	DIS	KM	KM	FM	REMK
1989	JAN	9	2337	54.06	19	15.97	155	22.84	7.75	3.0	3.7	55	10	132	.16	4	0.4	0.5	48	SWR F
		9	2358	15.64	19	15.76	155	23.11	8.62	2.8	3.2	52	7	130	.16	3	0.4	0.6	47	SWR F
		10	017	2.36	19	15.15	156	27.65	23.14	3.3	2.8	36	3	302	.11	62	1.2	5.4	38	DIS
		10	12 4	8.01	19	46.88	155	47.24	13.47	3.4	3.2	55	13	153	.14	12	0.4	0.2	45	HUA F
		17	1937	20.73	19	17.12	155	30.38	9.09	3.1	3.4	46	3	48	.14	4	0.4	0.6	37	LSW F
		24	815	23.60	18	51.43	155	15.04	11.85	2.8	3.4	32	3	264	.11	40	1.8	1.3	30	LOI
		24	836	33.51	18	51.82	155	17.32	12.29	2.8	3.3	29	1	262	.11	38	2.7	1.6	30	LOI
		24	853	6.19	18	53.71	155	18.30	13.88	3.3	3.8	32	1	256	.12	34	1.7	1.5	33	LOI
		24	857	11.99	18	52.74	155	17.31	12.04	2.7	3.3	30	2	261	.11	36	1.6	1.1	28	LOI
		24	922	0.02	18	53.25	155	18.68	15.60	2.9	3.4	31	2	256	.11	34	1.4	3.4	31	LOI
	24	926	39.74	18	55.15	155	18.19	9.94	3.1	3.7	32	2	250	.14	32	1.4	0.7	32	LOI	
	24	955	21.56	18	53.87	155	18.10	12.79	3.3	3.6	44	2	247	.09	34	1.3	0.9	42	LOI	
	25	156	39.04	19	21.63	155	30.13	10.26	3.3	3.4	58	9	33	.12	5	0.3	0.5	49	KAO	
	26	1352	25.57	18	50.17	155	12.32	10.13	2.9	3.1	40	4	262	.12	45	0.8	1.3	38	LOI	
	29	824	39.55	19	20.20	156	18.62	72.70		3.0	12	4	307	.11	44	2.5	1.3	8	KON	
	FEB	31	22 3	0.14	19	52.60	155	33.25	25.70	3.4	3.9	56	7	126	.12	11	0.7	1.1	49	KEA F
		3	152	47.12	19	36.60	155	57.50	36.89	3.3	3.5	51	8	246	.11	14	0.9	0.5	49	KON
		3	1921	0.41	19	19.98	155	8.00	9.41	3.5	3.7	48	2	88	.11	5	0.4	0.4	50	SF4
		6	1342	20.12	19	19.29	155	13.21	9.28	2.9	3.2	46	4	124	.13	6	0.4	0.5	42	SF2
		15	1941	12.85	19	18.93	155	13.71	9.83	3.3	3.4	60	13	67	.12	4	0.3	0.2	51	SF2
MAR	26	15 0	14.36	19	23.29	155	28.04	27.63	3.1	3.4	12	2	265	.04	2	1.7	1.1	0	DML L	
	27	856	53.69	19	19.29	155	11.20	9.60	3.0	3.2	56	10	102	.11	6	0.3	0.3	51	SF3 F	
	27	1227	5.68	19	21.44	155	17.83	15.87	2.8	3.3	18	5	136	.25	3	1.6	1.6	1	DEP L	
	2	516	53.98	19	23.36	155	17.36	13.83	2.9	3.4	19	4	60	.17	1	1.0	0.9	17	DEP L	
	2	819	43.47	19	10.95	155	38.93	4.43	2.9	3.2	43	5	107	.17	8	0.6	1.9	38	LSW	
	2	1925	14.61	19	17.41	155	16.53	11.88	2.9	3.2	8	4	263	.11	11	1.9	0.7	3	SF1 L	
	4	240	52.00	19	55.37	156	24.35	32.17	3.2	3.5	50	5	287	.14	65	1.4	2.5	47	DIS	
	4	1817	47.43	21	37.24	160	10.47	6.44		4.8	32	10	349	.18497	11.6	15.7	22	DIS		
	5	1536	19.51	19	25.84	155	11.01	17.70	2.9	3.2	9	1	293	.07	10	2.7	1.0	0	DEP L	
	11	10 2	47.10	19	25.04	155	17.20	12.48	2.6	3.5	17	3	87	.11	0	1.1	0.9	15	INT L	
	14	2356	10.80	19	16.32	155	27.32	9.30	2.7	3.3	51	8	129	.14	5	0.4	0.6	45	LSW	
	15	955	6.44	19	20.04	155	11.91	8.91	2.9	3.1	54	10	81	.12	5	0.4	0.3	48	SF3	
	15	2348	45.26	19	25.39	155	16.32	10.78	2.7	3.3	19	3	118	.10	2	0.9	0.6	17	INT L	
	16	4 4	59.88	19	15.88	155	51.13	10.56	3.1	3.1	53	7	128	.13	2	0.6	0.4	46	KON	
	20	1815	55.54	19	20.31	155	17.19	8.37	2.8	3.2	11	3	267	.09	4	1.1	2.2	1	SWR L	
22	1155	33.22	19	18.00	155	15.85	10.37	3.0	3.0	53	8	140	.13	5	0.4	0.3	48	SF1		
24	13 2	32.39	19	25.23	155	16.30	13.81	2.8	3.8	10	2	166	.06	1	1.7	2.5	0	DEP L		
28	1236	56.79	19	26.36	155	16.80	11.07	2.8	3.3	40	7	68	.12	2	0.5	0.4	32	INT L		
30	1617	24.35	19	25.17	155	16.09	11.10	2.8	3.2	15	2	118	.12	2	0.8	1.2	3	INT L		
31	8 5	17.43	18	52.21	155	15.68	12.01	3.8	4.3	49	1	254	.10	39	1.6	1.2	48	LOI		
APR	1	930	33.90	19	25.06	155	17.25	14.37	2.7	3.3	18	7	86	.12	1	1.3	0.8	14	DEP L	
	3	854	13.61	19	25.32	155	16.43	12.11	2.8	3.5	27	5	72	.14	1	0.8	0.5	24	INT L	
	3	1052	18.36	19	24.55	155	15.65	11.14	2.9	3.4	22	5	79	.10	2	0.7	0.5	19	INT L	
	4	657	23.55	19	25.62	155	15.96	12.55	2.8	3.2	21	4	92	.18	2	0.9	0.7	18	INT L	
	4	9 9	57.37	18	59.56	155	17.15	22.42	4.5	4.6	60	11	256	.14	26	0.8	2.2	53	LOI F	



## 1989 HVO EARTHQUAKE SUMMARY LIST M&gt;=3.0

YEAR	MON	DA	HRMN	SEC	LAT N DEG MIN	LON W DEG MIN	DEPTH KM	AMP MAG	DUR MAG	NR	NS	GAP DEG	RMS SEC	MIN DIS	ERH KM	ERZ KM	NO FM	REMK
1989	APR	5	539	28.95	19 29.48	155 51.92	11.36	2.9	3.2	40	7	185	.14	11	0.7	0.3	34	KON F
		5	21 0	24.75	19 19.60	155 11.60	8.64	3.0	3.1	52	8	92	.11	5	0.4	0.4	35	SF3
		8	458	15.32	19 24.42	155 18.57	6.42	3.1	3.3	53	11	33	.13	2	0.3	0.4	46	INT
		9	449	48.72	19 12.32	155 7.80	22.18	3.1	3.3	64	14	201	.13	9	0.6	1.0	51	DEP
		14	1731	54.70	19 11.61	155 38.01	2.78	3.3	3.0	45	9	99	.19	6	0.4	0.9	42	LSW
		17	2029	41.88	19 25.55	155 15.79	10.99	2.7	3.4	19	5	142	.15	2	1.1	0.9	1	INT L
		18	1412	8.22	19 27.08	155 16.19	6.89	2.7	3.3	13	5	179	.21	2	1.4	1.1	1	INT L
		19	754	54.41	19 19.16	155 28.43	10.56	3.1	3.2	57	9	41	.12	6	0.3	0.4	51	KAO F
		27	18 7	46.38	19 14.78	155 39.47	5.69	3.1	3.7	36	1	227	.23	4	1.5	1.3	28	LSW F
	MAY	6	8 9	27.72	19 21.50	155 2.01	8.88	3.7	3.7	56	6	150	.11	3	0.5	0.3	51	SF5 F
		12	1944	42.52	19 8.94	155 37.93	9.51	3.3	3.6	54	9	107	.21	11	0.5	0.7	51	LSW
		17	1 7	16.78	20 17.38	155 32.27	25.38	3.1	3.1	55	7	265	.12	31	0.6	1.5	53	KEA
		19	1941	46.57	19 30.19	155 27.45	5.82	3.2	3.2	61	12	58	.11	3	0.2	0.6	52	MLO
		26	2051	20.86	19 17.01	155 58.35	40.69	3.8	4.2	55	8	251	.11	11	0.7	0.9	50	KON F
		30	2019	2.24	19 21.44	155 2.89	8.81	2.9	3.1	53	5	121	.11	3	0.5	0.4	45	SF5
	JUN	1	836	56.46	19 21.36	155 2.94	9.18	3.8	4.0	57	7	118	.11	3	0.5	0.4	50	SF5 F
		1	9 6	9.83	19 21.57	155 2.96	8.94	2.9	3.2	55	9	116	.11	3	0.4	0.3	48	SF5 F
		5	2149	6.71	19 49.88	155 43.10	19.84	3.4	3.9	59	14	131	.12	7	0.4	1.1	50	HUA F
		12	1534	36.69	19 26.08	155 35.41	16.78	3.7	4.1	54	5	49	.10	3	0.4	0.7	45	DML F
		19	056	6.02	19 25.12	155 15.70	9.50	2.6	3.4	18	4	127	.15	2	1.1	0.6	15	INT L
		19	956	56.25	19 20.03	155 6.76	8.76	3.0	3.1	50	6	111	.11	5	0.5	0.4	47	SF4
		22	345	42.37	20 5.71	155 25.40	0.30	3.0	3.1	58	5	220	.13	24	0.8	0.3	52	KEA F
		25	1727	3.91	19 21.69	155 5.01	9.27	6.2	6.2	53	0	81	.11	5	0.5	0.4	55	SF5
		25	1837	13.22	19 21.51	154 59.15	8.17	3.1	3.6	44	0	193	.12	7	0.8	0.5	37	LER
		25	1852	10.60	19 20.15	154 58.76	9.81	3.3	4.0	56	8	205	.15	7	0.7	0.4	48	LER
		25	1944	30.65	19 21.70	154 59.80	0.29	3.4	4.0	39	1	185	.13	6	0.5	0.6	18	SLE
		25	20 6	10.57	19 21.98	154 58.29	4.46	3.8	4.3	37	2	202	.11	6	0.8	1.1	29	SLE
		25	2319	29.78	19 20.51	154 57.13	5.79	3.0	3.4	23	0	217	.14	9	1.5	1.2	26	LER
		25	2335	47.40	19 22.92	155 4.76	8.62	3.0	3.4	35	0	82	.10	3	0.4	0.4	34	SF5
		26	432	32.85	19 21.11	154 57.28	5.31	2.8	3.3	26	0	214	.19	8	1.4	1.1	26	LER
		26	710	40.92	19 17.65	155 12.73	9.83	2.9	3.2	35	3	148	.11	8	0.6	0.8	32	SF2
		26	852	28.07	19 20.05	154 57.33	5.85	3.9	4.2	35	1	218	.11	10	1.0	0.7	32	LER
		26	14 6	40.29	19 21.24	154 58.21	0.97	3.0	3.7	45	6	202	.12	7	0.6	0.4	29	SLE
		26	1428	26.58	19 21.34	154 58.77	1.47	2.7	3.5	28	4	197	.17	7	0.7	1.1	25	SLE
		26	1517	7.87	19 20.78	155 17.20	34.49	3.0	3.8	36	0	60	.10	1	0.7	1.3	27	DEP F
		27	940	12.67	19 20.91	155 1.56	0.63	2.5	3.6	46	7	176	.13	3	0.7	0.3	43	SSF
		28	1755	28.33	19 12.92	155 31.05	0.00	2.9	3.2	51	8	73	.25	8	0.4	0.3	34	LSW *
	JUL	2	650	41.52	19 22.82	155 4.09	8.47	2.8	3.3	53	10	90	.12	3	0.3	0.5	32	SF5
		2	1040	33.10	19 20.51	155 7.58	8.61	2.9	3.1	53	7	90	.12	5	0.3	0.5	39	SF4
		4	1554	7.18	19 13.78	155 16.67	4.86	3.0			9	1 314	.09	16	2.6	12.6	0	SSF L*
		13	2 2	10.85	20 21.82	155 32.64	0.02	3.0	3.6	44	2	279	.15	36	1.5	0.6	52	KEA *
		14	014	48.13	19 22.57	155 5.94	7.97	2.9	3.4	55	9	67	.12	3	0.3	0.5	43	SF4
		18	1823	29.28	19 46.03	156 9.14	9.72	3.0	3.5	43	3	255	.11	40	1.2	0.8	37	HUA
		19	415	8.08	19 46.11	156 5.24	8.46	3.1	3.4	33	4	241	.15	28	1.3	0.8	24	HUA
		21	149	35.74	17 48.31	157 9.92	49.61		3.4	22	0	346	.13206	16.4	2.5	23	DIS *	

## 1989 HVO EARTHQUAKE SUMMARY LIST M&gt;=3.0

YEAR	MON	DA	HRMN	SEC	LAT N DEG MIN	LON W DEG MIN	DEPTH KM	AMP MAG	DUR MAG	NR	NS	GAP DEG	RMS SEC	MIN DIS	ERH KM	ERZ KM	NO FM	REMK
1989	JUL	22	21	2	7.64 19 26.96	154 53.04	8.05	3.1	3.4	47	5	159	.16	3	0.9	0.4	43	LER F
		24	2355	41.50	19 25.59	155 26.76	8.06	3.0	3.1	57	9	38	.14	3	0.3	0.4	50	KAO
		28	20	3	18.63 19 22.53	155 18.50	6.58	2.3	5.2	12	4	182	.10	3	1.3	1.1	11	INT L
		29	1515	6.64	19 19.53	155 8.53	9.06	3.2	3.3	49	6	79	.11	4	0.4	0.4	50	SF4 F
	AUG	9	2039	22.05	19 21.05	155 6.52	7.30	2.9	3.5	60	7	93	.14	5	0.4	0.3	53	SF4 F
		21	054	21.00	19 52.12	155 33.26	20.55	3.1	3.5	60	12	122	.13	11	0.4	0.9	48	KEA
		21	151	26.67	19 46.49	156 9.21	39.65	3.5	3.6	70	22	252	.16	34	0.5	0.8	49	HUA
		26	1420	40.61	19 21.53	155 5.08	9.09	2.9	3.4	50	8	85	.10	5	0.3	0.3	45	SF5
	SEP	10	557	47.37	19 18.35	155 0.80	36.12	3.3	3.4	60	9	199	.12	5	0.9	0.5	51	DEP F
		13	2018	32.76	19 18.47	155 13.32	9.83	3.1	3.4	52	6	131	.11	8	0.5	0.4	48	SF2
		14	6	2	10.51 19 56.08	155 53.31	25.48	2.8	3.4	37	8	209	.11	24	0.9	1.1	31	KOH
		14	951	6.50	19 55.11	155 55.78	24.64	2.6	3.5	28	8	215	.12	27	1.1	1.7	23	KOH
		16	043	46.51	19 19.83	155 7.16	9.58	3.0	3.6	58	9	108	.11	5	0.5	0.4	51	SF4
		22	617	42.67	19 20.06	155 11.87	9.97	3.3	3.7	53	7	81	.10	5	0.4	0.3	50	SF3 F
		25	14	7	41.49 19 40.37	155 2.83	2.08	2.8	3.3	29	0	230	.14	19	1.2	15.3	34	HIL B*
	OCT	2	126	17.72	19 28.08	155 36.76	14.74	2.6	3.7	18	0	176	.12	2	1.1	0.7	21	DML L
		10	20	8	23.72 19 24.04	155 18.42	8.82	2.5	3.7	18	3	78	.11	3	0.6	0.8	17	INT L
		12	321	4.56	20 0.57	155 26.45	10.34	3.0		57	7	201	.12	17	0.6	0.4	53	KEA
		16	1025	49.56	20 23.85	154 4.90	32.50	3.2	4.7	49	9	339	.12	125	1.7	3.0	48	DIS
		19	15	1	47.70 19 26.13	155 16.48	11.75	2.6	3.7	19	5	131	.23	2	1.6	1.1	6	INT L
		21	224	49.31	19 17.56	155 27.55	10.53	2.9	3.1	55	7	49	.14	6	0.3	0.4	51	LSW
		24	033	34.08	19 56.75	155 31.60	33.87	3.3	3.5	62	10	159	.13	17	0.6	0.6	53	KEA
	NOV	2	2	3	59.89 19 17.34	155 29.38	10.28	2.9	3.5	51	3	54	.14	4	0.4	0.4	50	LSW F
		2	554	20.01	19 21.04	155 6.91	9.17	3.3		55	7	89	.12	4	0.5	0.4	50	SF4
		3	22	9	8.18 19 59.96	155 26.62	8.22	3.0	3.0	52	8	196	.12	16	0.4	0.6	49	KEA
		11	1015	35.02	19 55.86	156 3.54	31.97	3.4	3.7	49	4	248	.14	36	1.2	0.9	51	KOH
		13	442	47.46	21 27.81	158 7.41	7.00	2.8	4.0	11	1	355	.20	308	16.3	16.6	10	DIS *
		17	2337	55.12	19 19.95	155 8.20	9.09	2.9	3.5	54	5	84	.10	5	0.4	0.4	50	SF4
		19	052	6.94	20 45.50	154 48.31	49.64	2.9	3.4	21	2	306	.12	112	3.0	3.5	21	DIS
		21	426	14.73	19 34.00	156 27.48	10.49	3.0	3.1	51	6	280	.16	57	3.0	4.2	49	DIS
		21	10	6	59.67 19 20.75	155 6.42	7.90	3.1	3.6	54	7	99	.13	5	0.4	0.3	47	SF4
		21	2211	51.50	20 12.98	157 55.68	21.61	3.8	3.7	30	1	343	.12	225	4.5	6.1	34	DIS
		22	224	32.55	19 25.01	155 18.46	10.00	2.7	3.5	14	4	97	.14	2	1.3	0.8	12	INT L
		25	343	56.79	19 28.87	155 15.42	9.39	2.5	3.5	16	5	242	.13	3	1.3	0.9	12	GLN L
		25	2311	33.08	19 18.89	155 13.61	9.16	3.7	3.8	53	8	69	.11	3	0.3	0.3	50	SF2 F
		27	658	8.21	19 47.91	155 34.82	14.25	3.4	4.0	60	8	96	.11	13	0.3	0.4	54	KEA F
	DEC	3	11	4	34.77 19 18.32	155 14.19	10.67	3.1	3.6	57	8	137	.13	7	0.4	0.3	48	SF2
		5	1217	0.75	21 42.35	157 35.66	17.15	4.7	5.5	61	9	264	.17	60	1.6	18.8	53	DIS F*
		5	1941	31.85	19 58.13	155 30.64	31.30	3.1	3.5	63	14	173	.14	20	0.6	1.1	47	KEA
		15	249	52.62	19 28.50	155 52.88	10.34	3.4	4.0	48	5	114	.14	4	0.5	0.4	45	KON F
		24	2119	24.53	20 23.79	156 3.41	35.98	3.4	3.7	30	6	314	.11	42	0.5	0.6	53	KOH
		27	1643	12.68	19 9.72	155 33.61	9.35	3.1	3.6	43	4	137	.13	11	0.4	0.6	41	LSW F
		27	2313	17.11	19 19.68	155 12.38	9.58	5.3		46	1	83	.10	5	0.4	0.3	49	SF2 F
		27	2316	35.91	19 19.62	155 12.27	9.94	3.8	4.4	55	7	85	.10	5	0.3	0.3	52	SF3 F
		28	2017	57.54	19 20.32	155 17.53	33.55	2.9	3.7	65	16	54	.11	0	0.5	0.6	51	DEP F