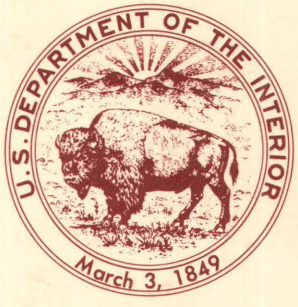
United States Earthquakes, 1982

U.S. GEOLOGICAL SURVEY BULLETIN 1655



United States Earthquakes, 1982

By Carl W. Stover

This publication lists parameters for earthquakes in all 50 states and Puerto Rico, including results from Network Operations and a summary of accelerograph data

U.S. GEOLOGICAL SURVEY BULLETIN 1655

DEPARTMENT OF THE INTERIOR
DONALD PAUL HODEL, Secretary

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United States Earthquakes, 1982

By Carl W. Stover, *Editor*

Introduction

This publication describes all earthquakes that were reported felt in the United States and nearby territories in 1982. Its purpose is to provide a continuous history of U.S. earthquakes for studying seismic risk, evaluating nuclear powerplant sites, designing earthquake-resistant structures, and answering inquiries from the scientific and general public.

The publication is composed of four major sections: "Earthquake Descriptions," which includes a summary of macroseismic data reported for each earthquake and a chronological list of earthquakes by State (table 1); "Network Operations," which summarizes the results from local seismic networks; "Miscellaneous Activities," which contains information on crustal movement studies, tsunamis, and principal earthquakes of the world (table 11); and "Strong-motion Seismograph Data" (table 12). The intensity and macroseismic data in "Earthquake Descriptions" are compiled from questionnaire canvasses (see next paragraph), newspaper articles, and reports prepared by other government organizations, State institutions, local organizations, and individuals. Each description includes date, origin time, hypocenter, and the source of the hypocenter computation, magnitude, maximum intensity (Modified Mercalli), and/or macroseismic effects reported in the area.

The USGS collects intensity information primarily by mailing questionnaires, "Earthquake Report" forms, to postmasters in the earthquake area. Postmasters complete the forms and return them to the USGS, where they are evaluated and intensities are assigned. For damaging earthquakes, the questionnaires are supplemented by USGS field investigations. The USGS publishes preliminary maximum intensity data for United States earthquakes in the Preliminary Determination of Epicenters, Monthly Listing (for example, Irby and others, 1982). The final information is published in detail with maps, diagrams, and photographs in the United States Earthquakes series, issued annually since 1928. Copies of earlier issues can be obtained from the Open-File Services Section (OFSS), Western Distribution Branch, U.S. Geological Survey, Box 25425, Federal Center, Denver, CO 80225.

DISCUSSION OF TABLES

The earthquake parameters in tables 1 and 11 include date, origin time, hypocenter (epicenter and focal depth), and magnitude. Table 1 also contains the maximum observed Modified Mercalli (MM) intensity. The origin time and date are listed in Universal Coordinated Time (UTC). The epicenters were taken principally from those published in the USGS Preliminary Determination of Epicenters, Monthly Listings or the USGS Circular 896 A-B-C-D Earthquakes in the United States. These data have been updated and new data added from subsequent publications of universities or State agencies who operate seismic networks. The accuracy of the epicenters is that claimed by the institution supplying the hypocenter and is not necessarily the accuracy indicated by the number of decimals listed. The epicenters located by the USGS have a varying degree of accuracy, usually two-tenths of a degree or less; however, some are accurate only to about one-half degree. See Preliminary Determination of Epicenters, Monthly Listing, for an explanation of the accuracy of USGS hypocenters. Depths are listed to the nearest kilometer.

Magnitudes listed in the tables were furnished by cooperating institutions or determined by the USGS. The computational sources are indicated by letter codes identified in headnotes to the tables.

EPICENTER AND ISOSEISMAL MAPS

Figures 1-3 are computer plots of all earthquake epicenters in the conterminous United States, Alaska, and Hawaii listed in table 1. Each earthquake epicenter is indicated by a small circle or square.

Figures 4-6 are computer plots of 1982 earthquake epicenters in the conterminous United States, Alaska, and Hawaii by Modified Mercalli (MM) intensity. Maximum intensities are represented by Arabic numerals at the epicentral locations. Earthquakes of intensity I-IV are represented by solid circles.

The USGS coordinates the collection of all types of earthquake information, with the special objective of correlating instrumentally determined earthquake locations with noninstrumental locations indicated by intensity data. This correlation is achieved through regional investigations of earthquakes by local organizations and the USGS. Primary data are gathered by a mail canvass of the epicentral area using questionnaire cards. A field survey is sometimes done for damaging events. When returned and analyzed, this information is used to prepare isoseismal maps which show the areal pattern of intensity associated with individual earthquakes.

The selection of intensity or isoseismal maps shown in the Earthquake Descriptions is governed largely by the size of the area affected. This means that sharp, localized shocks of intensity VI (which often occur in California) may not be represented by these maps, whereas more widely felt earthquakes of intensity V and VI (which are characteristic of the Eastern and Central States) often will be illustrated because of the larger felt areas.

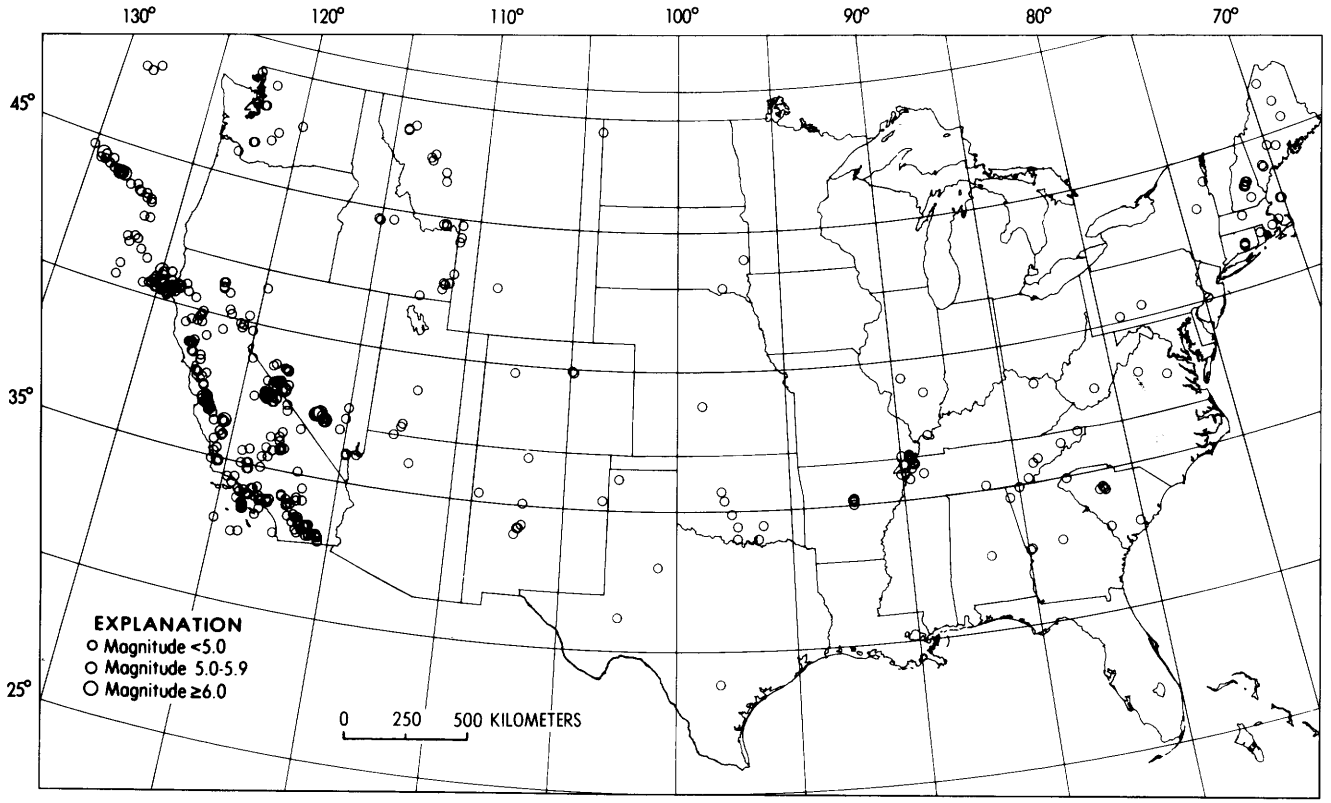

Figure 1. Earthquake epicenters in the conterminous United States for 1982.

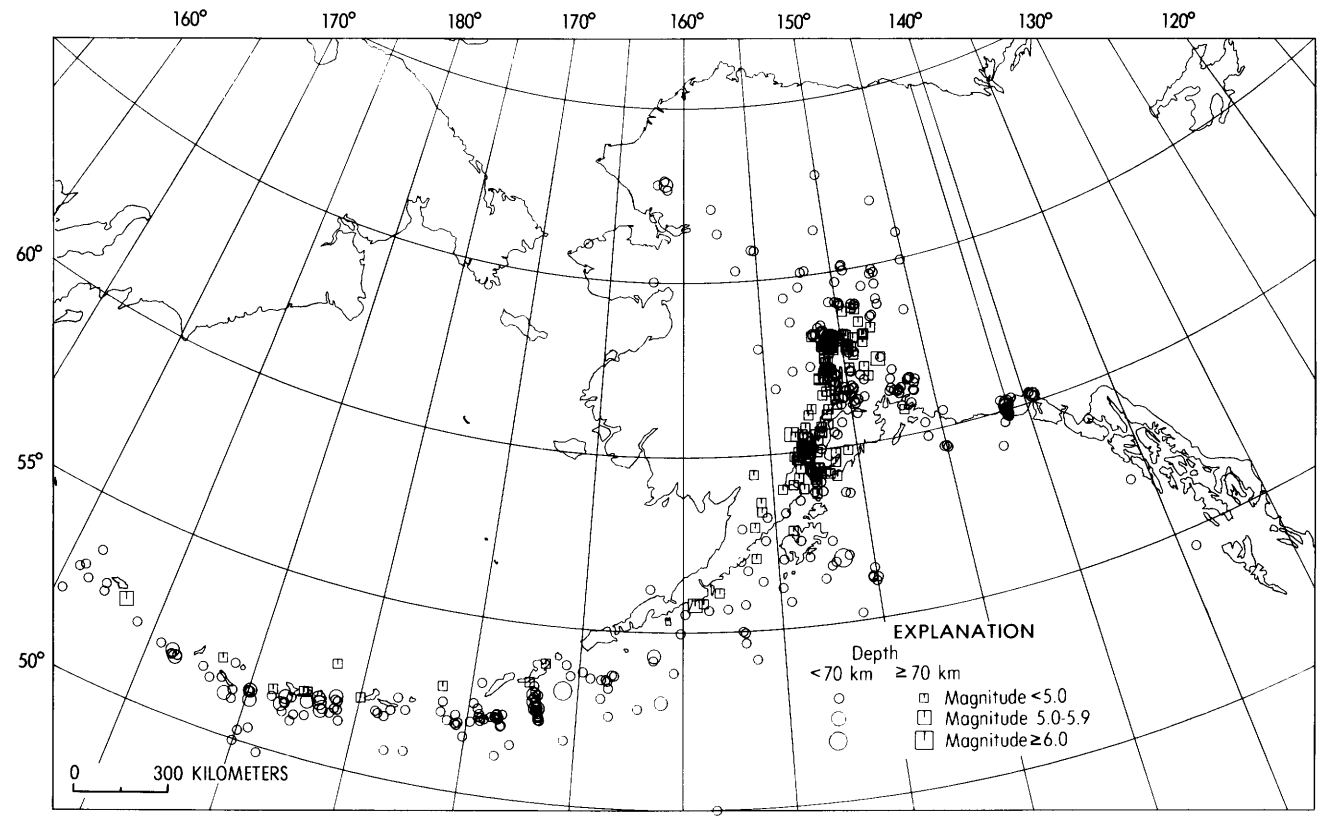

Figure 2. Earthquake epicenters in Alaska for 1982.

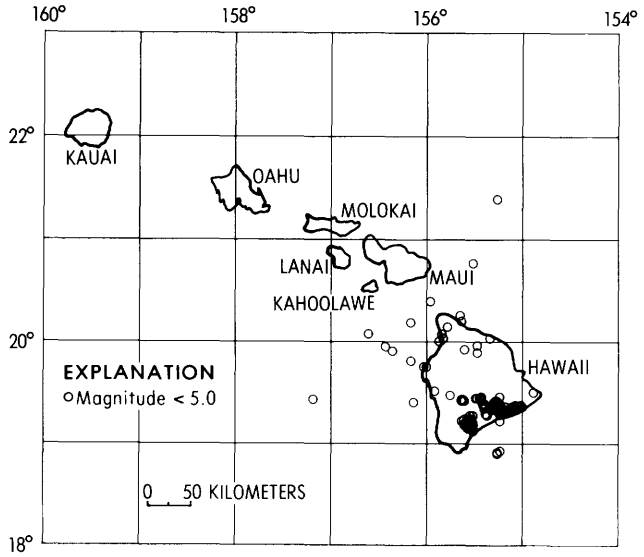

Figure 3. Earthquake epicenters in Hawaii for 1982.

Arabic numerals on these computer-plotted maps represent the maximum MM intensities at sampled localities. Isoseismal contours are a generalization of intensity data and are extrapolated in regions that have few observations. The contours do not include each intensity observation.

MAGNITUDE AND INTENSITY RATINGS

Magnitude, a measure of the "size" of an earthquake, is roughly related to the energy release at the focus of an earthquake. Although the magnitude scale has neither "top" nor "bottom" values, the highest ever recorded was magnitude 8.9 and the lowest about -3. On this logarithmic scale, a magnitude 6 shallow-focus earthquake represents elastic-wave energy about 30 times greater than that generated by a magnitude 5 earthquake, 900 times greater than that of a magnitude 4 shock, and so forth. Many factors enter into the determination of earthquake magnitude, including earthquake focal depth, frequency content of the sampled energy, and the earthquake radiation pattern. Magnitude values calculated by the USGS are based on the following formulas:

$$MS = \log (A/T) + 1.66 \log D + 3.3, \quad (1)$$

as adopted by the International Association of Seismology and Physics of the Earth's Interior (IASPEI; Bath, 1966, p. 153), where A is the maximum vertical surface-wave ground amplitude, in micrometers; T is the period, in seconds, and $18 \leq T \leq 22$; and D is the distance in geocentric degrees (station to epicenter), and $20^\circ \leq D < 160^\circ$. No depth correction is made for depth less than 50 km, and no MS magnitudes are computed for depths greater than 50 km.

$$mb = \log (A/T) + Q(D,h), \quad (2)$$

as defined by Gutenberg and Richter (1956), except that T, the period in seconds, is restricted to $0.1 \leq T \leq 3.0$, and A, the ground amplitude in micrometers, is not necessarily the maximum of the P-wave group. Q is a function of distance D and depth h, where $D \geq 5^\circ$.

$$ML = \log A - \log A_0, \quad (3)$$

as defined by Richter (1958, p. 340), where A is the maximum trace amplitude in millimeters, written by a Wood-Anderson torsion seismometer, and log A_0 is a standard value as a function of distance, where the distance is ≤ 600 km. ML values are also calculated from other seismometers by conversion of recorded ground motion to the expected response of the torsion seismometer. ML magnitudes are listed for events with depths less than 70 km.

$$Mn = 3.75 + 0.90(\log D) + \log (A/T) \quad 0.5^\circ \leq D \leq 4^\circ, \quad (4)$$

$$Mn = 3.30 + 1.66(\log D) + \log(A/T) \quad 4^\circ \leq D \leq 30^\circ$$

as proposed by Nuttli (1973), where A/T is expressed in micrometers per second, calculated from the vertical-component 1-second Lg waves, and D is the distance in geocentric degrees.

MD is used in this publication for the duration or coda length magnitude. MD is usually computed from the difference, in seconds, between Pn- or Pg-wave arrival time and the time the final coda amplitude decreases to the background-noise amplitude. These magnitudes are normally correlated with ML or Mn so that resulting magnitudes are compatible. Thus the formulas vary for different geographic regions and seismograph systems.

Intensity, as applied to earthquakes, represents a quantity determined from the effects on people, man-made objects, and the Earth's surface (landslides, ground fissures). Intensities are assigned according to the descriptions listed in the Modified Mercalli Intensity Scale of 1931 (Wood and Neumann, 1931). There are 12 discrete steps in the MM scale (see next section). An earthquake in a populated area will have different intensities at different localities, owing to the distance from the focus of the earthquake, type of focal mechanism, local geological conditions, structural design of buildings, and the earthquake magnitude.

The text of this publication gives the intensity at locations where an earthquake was reported felt and summaries of the strongest effects. Each earthquake is further characterized by its maximum intensity, which is given in the text and in table 1. All earthquake questionnaires or descriptions that contain minimal or sketchy information are listed only as "FELT". This does not imply that the earthquake was felt at a low intensity level, but indicates that the available data are not sufficient for assigning a valid intensity value.

Although the Modified Mercalli Intensity Scale is in many instances inadequate for present-day requirements, the scale has been the guide used by the USGS and will continue to be so until a new scale has been devised and has acceptance in the engineering and seismological communities.

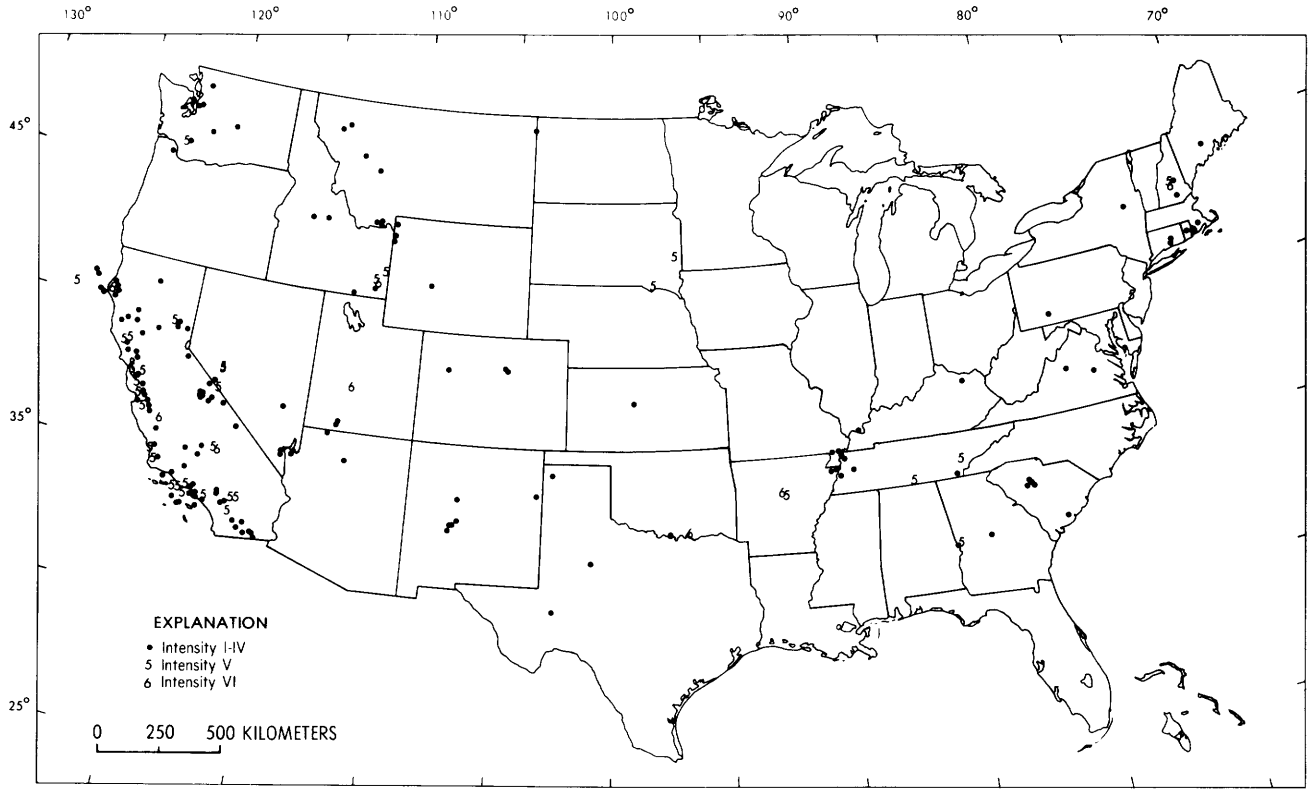

Figure 4. Plot of earthquakes in the conterminous United States that were felt or caused damage in 1982.

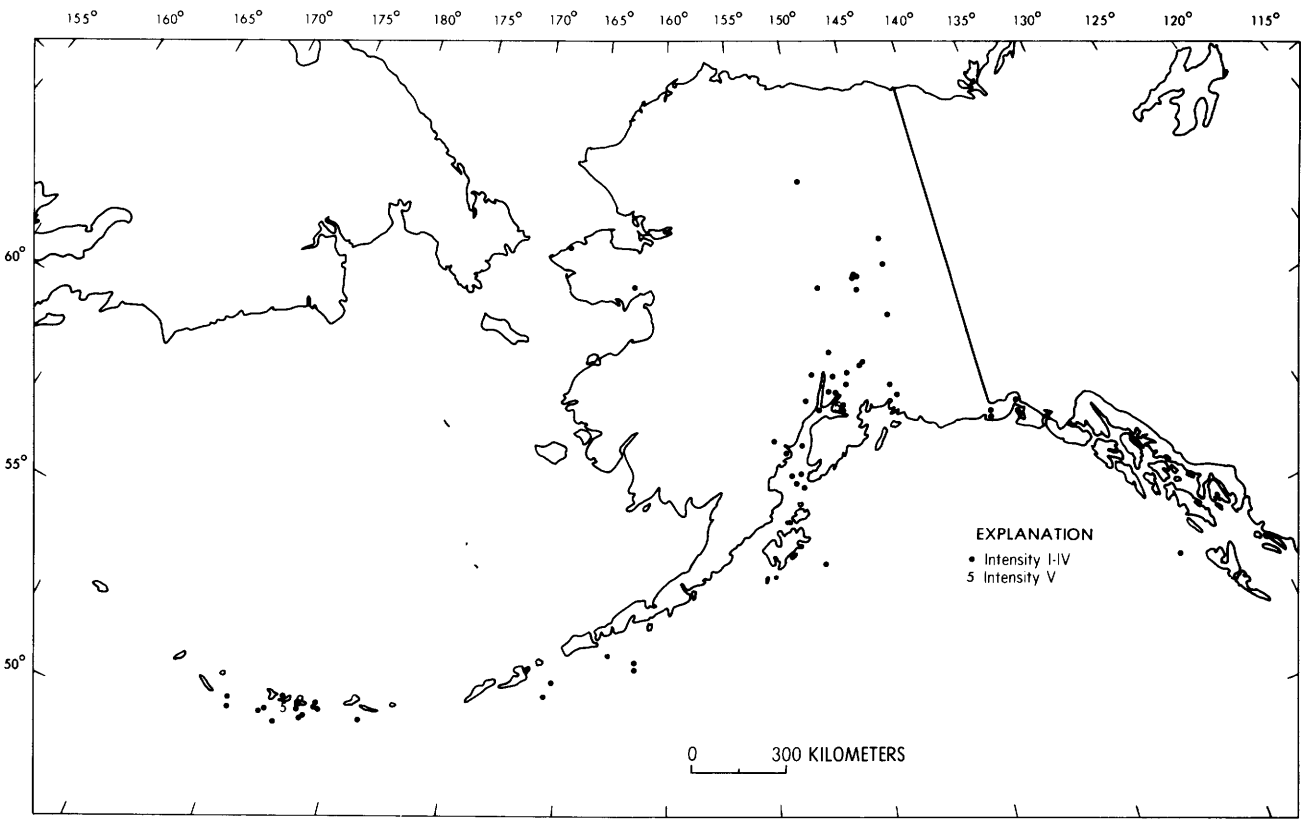

Figure 5. Plot of earthquakes in Alaska that were felt or caused damage in 1982.

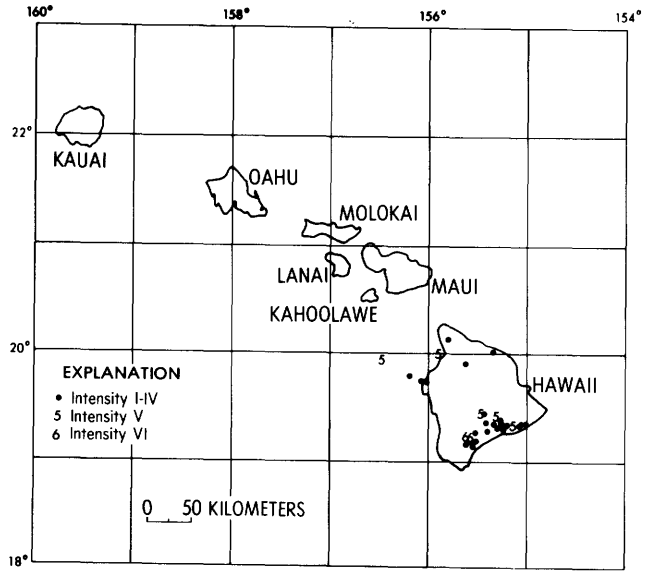

Figure 6. Plot of earthquakes in Hawaii that were felt or caused damage in 1982.

MODIFIED MERCALLI INTENSITY SCALE OF 1931

Adapted from Sieberg's Mercalli-Cancani scale, modified and condensed.

I. Not felt—or, except rarely under especially favorable circumstances. Under certain conditions, at and outside the boundary of the area in which a great shock is felt: sometimes birds, animals, reported uneasy or disturbed; sometimes dizziness or nausea experienced; sometimes trees, structures, liquids, bodies of water, may sway—doors may swing, very, slowly.

II. Felt indoors by few, especially on upper floors, or by sensitive, or nervous persons. Also, as in grade I, but often more noticeably: sometimes hanging objects may swing, especially when delicately suspended; sometimes trees, structures, liquids, bodies of water, may sway, doors may swing, very slowly; sometimes birds, animals, reported uneasy or disturbed; sometimes dizziness or nausea experienced.

III. Felt indoors by several, motion usually rapid vibration. Sometimes not recognized to be an earthquake at first. Duration estimated in some cases. Vibration like that due to passing of light, or lightly loaded trucks, or heavy trucks some distance away. Hanging objects may swing slightly. Movements may be appreciable on upper levels of tall structures. Rocked standing motor cars slightly.

IV. Felt indoors by many, outdoors by few. Awakened few, especially light sleepers. Frightened no one, unless apprehensive from previous experience. Vibration like that due to passing of heavy or heavily loaded trucks. Sensation like heavy body striking building or falling of heavy objects inside. Rattling of dishes, windows, doors; glassware and crockery clink and clash. Creaking of walls, frame, especially in the upper range of this grade. Hanging objects swung, in numerous instances. Disturbed liquids in open vessels slightly. Rocked standing motor cars noticeably.

V. Felt indoors by practically all, outdoors by many or most: outdoors direction estimated. Awakened many, or most. Frightened few—slight excitement, a few ran outdoors. Buildings trembled throughout. Broke dishes, glassware, to some extent. Cracked windows—in some cases, but not generally. Overturned vases, small or unstable objects, in many instances, with occasional fall. Hanging objects, doors, swing generally or considerably. Knocked pictures against walls, or swung them out of place. Opened, or closed, doors, shutters, abruptly. Pendulum clocks stopped, started or ran fast, or slow. Moved small objects, furnishings, the latter to slight extent. Spilled liquids in small amounts from well-filled open containers. Trees, bushes, shaken slightly.

VI. Felt by all, indoors and outdoors. Frightened many, excitement general, some alarm, many ran outdoors. Awakened all. Persons made to move unsteadily. Trees, bushes, shaken slightly to moderately. Liquid set in strong motion. Small bells rang—church, chapel, school, etc. Damage slight in poorly built buildings. Fall of plaster in small amount. Cracked plaster somewhat, especially fine cracks in chimneys in some instances. Broke dishes, glassware, in considerable quantity, also some windows. Fall of knick-knacks, books, pictures. Overturned furniture in many instances. Moved furnishings of moderately heavy kind.

VII. Frightened all—general alarm, all ran outdoors. Some, or many, found it difficult to stand. Noticed by persons driving motor cars. Trees and bushes shaken moderately to strongly. Waves on ponds, lakes, and running water. Water turbid from mud stirred up. Incaving to some extent of sand or gravel stream banks. Rang large church bells, etc. Suspended objects made to quiver. Damage negligible in buildings of good design and construction, slight to moderate in well-built ordinary buildings, considerable in poorly built or badly designed buildings, adobe houses, old walls (especially where laid up without mortar), spires, etc. Cracked chimneys to considerable extent, walls to some extent. Fall of plaster in considerable to large amount, also some stucco. Broke numerous windows, furniture to some extent. Shook down loosened brickwork and tiles. Broke weak chimneys at the roof-line (sometimes damaging roofs). Fall of cornices from towers and high buildings. Dislodged bricks and stones. Overturned heavy furniture, with damage from breaking. Damage considerable to concrete irrigation ditches.

VIII. Fright general—alarm approaches panic. Disturbed persons driving motor cars. Trees shaken strongly--branches, trunks, broken off, especially palm trees. Ejected sand and mud in small amounts. Changes: temporary, permanent; in flow of springs and wells; dry wells renewed flow; in temperature of spring and well waters. Damage slight in structures (brick) built especially to withstand earthquakes. Considerable in ordinary substantial buildings, partial collapse: racked, tumbled down, wooden houses in some cases; threw out panel walls in frame structures, broke off decayed piling. Fall of walls. Cracked, broke, solid stone walls seriously. Wet ground to some extent, also ground on steep slopes. Twisting, fall, of chimneys, columns, monuments, also factory stacks, towers. Moved conspicuously, overturned, very heavy furniture.

IX. Panic general. Cracked ground conspicuously. Damage considerable in (masonry) structures built especially to withstand earthquakes: Threw out of plumb some wood-frame houses built especially to withstand earthquakes; great in substantial (masonry) buildings,

some collapse in large part; or wholly shifted frame buildings off foundations, racked frames; serious to reservoirs; underground pipes sometimes broken.

X. Cracked ground, especially when loose and wet, up to widths of several inches; fissures up to a yard in width ran parallel to canal and stream banks. Landslides considerable from river banks and steep coasts. Shifted sand and mud horizontally on beaches and flat land. Changed level of water in wells. Threw water on banks of canals, lakes, rivers, etc. Damage serious to dams, dikes, embankments. Severe to well-built wooden structures and bridges, some destroyed. Developed dangerous cracks in excellent brick walls. Destroyed most masonry and frame structures, also their foundations. Bent railroad rails slightly. Tore apart, or crushed endwise, pipe lines buried in earth. Open cracks and broad wavy folds in cement pavements and asphalt road surfaces.

XI. Disturbances in ground many and widespread varying with ground material. Broad fissures, earth slumps, and land slips in soft, wet ground. Ejected water in large amounts charged with sand and mud. Caused sea-waves ("tidal" waves) of significant magnitude. Damage severe to wood-frame structures, especially near shock centers. Great to dams, dikes, embankments often for long distances. Few, if any (masonry) structures remained standing. Destroyed large well-built bridges by the wrecking of supporting piers, or pillars. Affected yielding wooden bridges less. Bent railroad rails greatly, and thrust them endwise. Put pipe lines buried in earth completely out of service.

XII. Damage total—practically all works of construction damaged greatly or destroyed. Disturbances in ground great and varied, numerous shearing cracks. Landslides, falls of rock of significant character, slumping of river banks, etc., numerous and extensive. Wrenched loose, tore off, large rock masses. Fault slips in firm rock, with notable horizontal and vertical offset displacements. Water channels, surface and underground, disturbed and modified greatly. Dammed lakes, produced waterfalls, deflected rivers, etc. Waves seen on ground surfaces (actually seen, probably, in some cases). Distorted lines of sight.

COLLABORATORS

Active cooperation in earthquake investigations in the United States is provided by several seismological collaborators. The following served as collaborators to the USGS during 1982.

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California (southern).—Clarence R. Allen, California Institute of Technology, Pasadena.
Canada.—Staff of Earth Physics Branch, Seismological Service of Canada, Ottawa.
Canada.—Staff of Pacific Geoscience Centre, Sidney, British Columbia.
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Delaware.—Kenneth D. Woodruff, University of Delaware Newark.
Florida and Georgia.—Leland T. Long, Georgia Institute of Technology, Atlanta.
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Texas.—W. D. Pennington, University of Texas, Austin.
Utah.—R. B. Smith, University of Utah, Salt Lake City.
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Washington.—Robert S. Crosson, University of Washington, Seattle.
Wyoming—R. A. Hutchinson, National Park Service, Yellowstone National Park.

Earthquake Descriptions

This section lists all earthquakes alphabetically by State. The origin time of earthquake occurrence is given in Universal Coordinated Time (UTC). Times are expressed continuously from midnight to midnight, or 0 to 24 hours.

Sources of noninstrumental information (macroseismic data) in this publication include questionnaire canvasses conducted by the USGS; newspaper articles; bulletins of the Seismological Society of America; and special earthquake reports of other organizations. Instrumental data are provided by the USGS, National Earthquake Information Service and universities that operate seismic networks.

Roman numerals in the earthquake descriptions refer to the Modified Mercalli Intensity Scale of 1931 (see page 5), which gives about equal weight to the disturbance of inanimate objects and to personal reactions. When more than one degree of intensity is reported from a town, the town is assigned the highest intensity reported. All earthquake questionnaires or press reports that contain only minimal information without enough detail from which to assign an intensity are listed as "Felt."

[The following symbols are used to indicate authority for arrival or origin times, epicenters, and/or magnitudes: (A) University of Alaska, College; (B) University of California, Berkeley; (C) Kansas Geological Survey, Lawrence; (D) University of Montana, Missoula; (E) U.S. Department of Energy, Las Vegas, Nevada; (F) Georgia Institute of Technology, Atlanta; (G) U.S. Geological Survey, Golden, Colorado, or Menlo Park, California; (H) U.S. Geological Survey, Hawaiian Volcano Observatory, Hawaii National Park; (I) University of Kentucky, Lexington; (J) Weston Observatory, Weston, Mass.; (K) Tennessee Earthquake Information Center, Memphis; (L) Lamont-Doherty Geological Observatory, Palisades, N.Y.; (M) NOAA, Alaska Tsunami Warning Center, Palmer; (O) Seismological Service of Canada, Ottawa, Ontario; (P) California Institute of Technology, Pasadena; (Q) Pacific Geoscience Centre, Sidney, B.C., Canada; (R) University of Nevada, Reno; (S) St. Louis University, St. Louis, Mo.; (T) Oklahoma Geological Survey, Leonard; (U) University of Utah, Salt Lake City; (V) Virginia Polytechnic Institute and State University, Blacksburg; (W) University of Washington, Seattle; (X) Pennsylvania State University, University Park; (Y) University of South Carolina, Columbia. Normal depth = 33 km. Leaders (...) indicate information is not available]

ALABAMA

31 October (G) Western Georgia
Origin time: 03 07 36.7

See Georgia listing.

31 October (G) Western Georgia
Origin time: 03 12 12.2

See Georgia listing.

ALASKA

6 January (G) Andreanof Islands, Aleutian Islands
Origin time: 12 23 40.0
Epicenter: 51.50 N., 176.59 W.
Depth: 53 km
Magnitude: 5.0mb(G), 4.3ML(M)
Intensity II: Adak (M).

12 January (G) Southern Alaska
Origin time: 15 22 55.2
Epicenter: 59.07 N., 152.26 W.
Depth: 68 km
Magnitude: 4.8mb(G)
Intensity IV: Homer

25 January (G) Fox Islands, Aleutian Islands
Origin time: 05 29 33.5
Epicenter: 53.22 N., 165.72 W.
Depth: 60 km
Magnitude: 6.1mb(G), 6.5mb(B), 5.8MS(B), 6.4mb(P).
Intensity IV: Cold Bay.
Felt: Dutch Harbor and Unalaska (M).

3 February (G) Southern Alaska
Origin time: 10 42 56.5
Epicenter: 61.63 N., 149.69 W.
Depth: 41 km
Magnitude: 3.4ML(M)
Intensity III: Palmer (M).
Intensity II: Thunderbird Falls (M).

3 February (G) Southern Alaska
Origin time: 16 25 09.6
Epicenter: 61.82 N., 148.97 W.
Depth: 30 km
Magnitude: 2.7ML(M)
Intensity II: Palmer (M).

7 February (G) Andreanof Islands, Aleutian Islands
Origin time: 06 07 13.2
Epicenter: 51.78 N., 176.87 W.
Depth: 60 km
Magnitude: 5.3mb(G)

Felt on Adak (M).

26 February (G) Southern Alaska
Origin time: 07 16 58.0
Epicenter: 60.15 N., 153.06 W.
Depth: 125 km
Magnitude: 4.9mb(G)

Intensity IV: Clam Gulch, English Bay, Homer (M), Kenai, Ninilchik, Tyonek.
Intensity III: Anchorage (M), Anchor Point, Cooper Landing, Palmer (M), Seldovia, Soldotna.
Intensity II: Seward.

27 February (G) Southern Alaska
Origin time: 12 18 07.1
Epicenter: 62.34 N., 147.92 W.
Depth: 71 km
Magnitude: 5.0mb(G)
Intensity III: Fairbanks.
Felt: Anchorage (M), Palmer (M).

27 February (G) Central Alaska
Origin time: 13 07 10.5
Epicenter: 64.87 N., 147.29 W.
Depth: 21 km
Magnitude: 3.0ML(M)
Intensity III: Fairbanks.

9 March (G) Southern Alaska
Origin time: 16 25 18.6
Epicenter: 60.15 N., 152.94 W.
Depth: 127 km
Magnitude: 4.4mb(G)
Intensity II: Homer (M).

30 March (G) Central Alaska
Origin time: 03 44 23.0
Epicenter: 64.96 N., 145.21 W.
Depth: 10 km
Magnitude: 4.1ML(M)
Intensity IV: Fairbanks.
Felt: Chena Hot Springs (M), Delta (M).

11 April (G) Central Alaska
Origin time: 15 03 27.8
Epicenter: 62.19 N., 148.81 W.
Depth: 79 km
Magnitude: None computed.
Intensity II: Palmer (M).

15 April (G) Alaska Peninsula
Origin time: 16 21 14.6
Epicenter: 54.21 N., 161.63 W.
Depth: 59 km
Magnitude: 5.3mb(G)
Intensity IV: Cold Bay.
Intensity III: Sand Point (M).

16 April (G) Southern Alaska
Origin time: 11 31 47.8
Epicenter: 61.27 N., 149.48 W.
Depth: 52 km
Magnitude: 3.4ML(M)
Intensity IV: Anchorage (M), Chugiak (M), Palmer (M).

23 April (G) Southern Alaska
Origin time: 15 30 36.6
Epicenter: 61.24 N., 146.15 W.
Depth: 26 km
Magnitude: 2.8ML(M)
Intensity III: Valdez (M).

ALASKA--Continued

23 April (G) Andreanof Islands, Aleutian Islands
Origin time: 23 18 23.5
Epicenter: 51.18 N., 179.84 W.
Depth: 44 km
Magnitude: 5.6mb(G), 5.1MS(G), 5.2MS(B).
Intensity III: Adak (M).

3 May (G) Southeastern Alaska
Origin time: 10 14 14.2
Epicenter: 60.12 N., 141.12 W.
Depth: 11 km
Magnitude: 5.0mb(G), 4.7MS(G), 5.1ML(M)
Intensity IV: Icy Bay, Yakutat.

3 May (G) Southeastern Alaska
Origin time: 15 17 26.1
Epicenter: 60.03 N., 141.14 W.
Depth: 15 km
Magnitude: 4.2mb(G), 4.6ML(M)
Intensity III: Yakutat (M).

5 May (G) Southern Alaska
Origin time: 19 49 54.3
Epicenter: 61.25 N., 149.75 W.
Depth: 63 km
Magnitude: 4.8mb(G)

In Resurrection Valley large lumber piles were reported to have bounced up and down.

Intensity V: The most common effects at the places listed below were: few small objects overturned, few merchandise items thrown from store shelves, few glassware and dishes broken.
Anchorage--few windows were cracked, light furniture or small appliances were overturned, hanging pictures were swung out of place, hanging objects or doors were swung moderately to violently.
Eagle River--hairline cracks in interior plaster walls, few small objects fell, hanging objects or doors were swung moderately.
Intensity IV: Chugiak, Cooper Landing, Elmendorf AFB, Hope, Kenai, Moose Pass, Nikishka, Sterling, Sutton, Talkeetna, Tyonek, Valdez, Wasilla, Whittier, Willow.
Intensity III: Ninilchik, Point Campbell, Skwentna.
Felt: Anchor Point.

7 May (G) Andreanof Islands, Aleutian Islands
Origin time: 00 43 38.4
Epicenter: 51.84 N., 177.58 W.
Depth: 101 km
Magnitude: 4.3mb(G)
Intensity III: Adak (M).

14 May (G) Queen Charlotte Islands region
Origin time: 10 00 50.7
Epicenter: 54.48 N., 134.23 W.
Depth: 10 km
Magnitude: 4.1mb(G), 4.1ML(M)
Intensity IV: Ketchikan (M).

ALASKA--Continued

4 June (G) Andreanof Islands, Aleutian Islands
Origin time: 03 01 04.1
Epicenter: 51.60 N., 177.33 W.
Depth: 59 km
Magnitude: 5.8mb(G), 5.7MS(B), 5.7ML(M)
Intensity V:
Adak--few windows were cracked, few small objects fell, few glassware and dishes were broken, many merchandise items were thrown from store shelves, hanging objects or doors were swung violently.

15 June (G) Andreanof Islands, Aleutian Islands
Origin time: 19 57 38.3
Epicenter: 51.32 N., 178.47 W.
Depth: 49 km
Magnitude: 5.0mb(G), 4.0MS(G), 5.3ML(M)
Intensity III: Adak (M).

18 June (G) Southern Alaska
Origin time: 14 08 13.8
Epicenter: 59.49 N., 152.33 W.
Depth: 71 km
Magnitude: None computed.
Intensity IV: Homer (M).

22 June (G) Fox Islands, Aleutian Islands
Origin time: 07 05 27.1
Epicenter: 53.93 N., 166.64 W.
Depth: 90 km
Magnitude: 4.8mb(G)
Intensity IV: Unalaska (M).

24 June (G) Central Alaska
Origin time: 04 57 58.7
Epicenter: 64.78 N., 147.16 W.
Depth: 15 km
Magnitude: 3.0ML(M)
Intensity IV: Fairbanks.

24 June (G) Central Alaska
Origin time: 05 26 53.2
Epicenter: 64.76 N., 147.44 W.
Depth: 15 km
Magnitude: 2.3ML(M)

Felt at Fairbanks (M).

1 July (G) Southern Alaska
Origin time: 00 09 52.2
Epicenter: 59.48 N., 152.83 W.
Depth: 97 km
Magnitude: 4.5mb(G)
Intensity III: Homer (M).

1 July (G) Andreanof Islands, Aleutian Islands
Origin time: 07 41 53.2
Epicenter: 51.43 N., 179.94 W.
Depth: 48 km
Magnitude: 6.3mb(G), 5.5MS(G), 5.4MS(B), 5.4ML(M)
Intensity IV: Adak Island (M).

1 July (G) Eastern Alaska
Origin time: 22 18 11.8

ALASKA--Continued

Epicenter: 63.55 N., 145.68 W.
Depth: 8 km
Magnitude: 3.6ML(M)

Felt at Black Rapids and Delta Junction (A).

6 July (G) Southern Alaska
Origin time: 17 33 08.8
Epicenter: 59.22 N., 152.64 W.
Depth: 69 km
Magnitude: 4.8mb(G)
Intensity IV: Homer (M).

6 July (G) Southern Alaska
Origin time: 19 48 11.9
Epicenter: 61.69 N., 150.19 W.
Depth: 18 km
Magnitude: 3.3ML(M)
Intensity III: Wasilla (M).

9 July (A) Central Alaska
Origin time: 07 40 43.8
Epicenter: 62.83 N., 149.77 W.
Depth: 88 km
Magnitude: 2.7ML(A)

Felt along the Parks Highway between Chulitna and Honolulu. (A).

10 July (G) Southern Alaska
Origin time: 09 22 37.6
Epicenter: 61.17 N., 149.66 W.
Depth: 59 km
Magnitude: 4.3mb(G), 4.0ML(M)
Intensity IV: Anchorage (M).
Intensity III: Palmer (M).

14 July (G) Southern Alaska
Origin time: 12 15 47.6
Epicenter: 60.51 N., 153.67 W.
Depth: 157 km
Magnitude: 5.0mb(G)
Intensity IV: Clam Gulch, Cooper Landing, Ninilchik.
Intensity III: Anchor Point, Anchorage, Homer (M), Kenai.
Intensity II: Palmer (M).

26 July (G) Southern Alaska
Origin time: 05 06 51.4
Epicenter: 62.36 N., 147.75 W.
Depth: 57 km
Magnitude: 4.1mb(G), 3.8ML(M)
Intensity III: Palmer (M).

27 July (A) Central Alaska
Origin time: 14 40 50.5
Epicenter: 64.45 N., 147.29 W.
Depth: 12 km
Magnitude: 2.0ML(A)

Felt at Eielson Air Force Base (A).

30 July (G) Central Alaska
Origin time: 01 41 50.4

Epicenter: 64.69 N., 149.83 W.
Depth: 15 km
Magnitude: 3.9ML(M)

Felt at Fairbanks, Manley Hot Springs, and Minto (M).

31 July (G) Near Islands, Aleutian Islands
Origin time: 06 29 15.5
Epicenter: 51.76 N., 176.14 E.
Depth: 38 km
Magnitude: 6.2mb(G), 6.5mb(P), 6.0MS(G) 6.1MS(B), 5.6MS(P), 5.9ML(M).
Intensity III: Shemya Island (M).

5 August (G) Southern Alaska
Origin time: 14 45 03.1
Epicenter: 61.42 N., 149.89 W.
Depth: 37 km
Magnitude: 3.0ML(M)

Felt at Anchorage, Eagle River, and Palmer (M).

6 August (G) Andreanof Islands, Aleutian Islands
Origin time: 00 41 55.3
Epicenter: 51.14 N., 177.75 W.
Depth: Normal
Magnitude: 4.5mb(G), 4.1ML(M)
Intensity III: Adak Island (M).

6 August (G) Andreanof Islands, Aleutian Islands
Origin time: 04 53 58.6
Epicenter: 51.95 N., 176.09 W.
Depth: 64 km
Magnitude: 5.4mb(G), 4.8MS(B)
Intensity IV: Adak Island (M).

7 August (G) Southeastern Alaska
Origin time: 08 37 25.8
Epicenter: 60.21 N., 139.54 W.
Depth: 15 km
Magnitude: 4.7mb(G)
Intensity III: Yakutat (M).

7 August (G) Western Alaska
Origin time: 19 53 46.1
Epicenter: 66.00 N., 166.77 W.
Depth: 15 km
Magnitude: 4.8mb(G), 4.7MS(G)
Intensity IV: Nome.
Intensity III: Kotzebue.

8 August (G) Andreanof Islands, Aleutian Islands
Origin time: 14 11 00.6
Epicenter: 51.85 N., 176.09 W.
Depth: 68 km
Magnitude: 4.8mb(G)

Felt on Adak Island (M).

9 August (G) Andreanof Islands, Aleutian Islands
Origin time: 12 47 54.6
Epicenter: 51.82 N., 175.96 W.

ALASKA--Continued

Depth: 67 km
Magnitude: 4.8mb(G)

Felt on Adak Island (M).

10 August (G) Southern Alaska
Origin time: 19 12 20.2
Epicenter: 62.13 N., 149.73 W.
Depth: 57 km
Magnitude: 4.2ML(M)

Felt at Talkeetna (M).

15 August (G) Western Alaska
Origin time: 15 47 27.1
Epicenter: 65.01 N., 162.07 W.
Depth: Normal
Magnitude: 4.4mb(G), 4.6ML(M)

Felt from Koyuk to Nome along the southern coast of the Seward Peninsula (M).

16 August (G) Andreanof Islands, Aleutian Islands
Origin time: 20 58 20.7
Epicenter: 51.78 N., 174.06 W.
Depth: 49 km
Magnitude: 5.4mb(G), 4.6MS(G), 4.8ML(M)
Intensity III: Adak Island (M).

22 August (G) Andreanof Islands, Aleutian Islands
Origin time: 15 23 21.3
Epicenter: 51.66 N., 176.78 W.
Depth: 59 km
Magnitude: 5.1mb(G)
Intensity III: Adak Island (M).

22 August (G) Southern Alaska
Origin time: 15 44 21.3
Epicenter: 61.62 N., 149.67 W.
Depth: 39 km
Magnitude: 3.2ML(M)

Felt in the Palmer-Wasilla Area (M).

24 August (G) Fox Islands, Aleutian Islands
Origin time: 04 09 15.6
Epicenter: 53.65 N., 165.44 W.
Depth: Normal
Magnitude: 5.3mb(G), 4.8MS(G), 4.7MS(B)
Intensity IV: Unalaska (M).

26 August (G) Southeastern Alaska
Origin time: 19 02 23.4
Epicenter: 58.99 N., 136.95 W.
Depth: 15 km
Magnitude: 4.1mb(G)

Felt at Haines (M).

27 August (G) Andreanof Islands, Aleutian Islands
Origin time: 11 59 00.6
Epicenter: 51.39 N., 178.28 W.

ALASKA--Continued

Depth: 49 km
Magnitude: 5.1mb(G), 4.4MS(G), 4.9ML(M)

Felt on Adak Island (M).

30 August (G) Alaska Peninsula
Origin time: 13 30 06.1
Epicenter: 54.53 N., 161.62 W.
Depth: 35 km
Magnitude: 5.2mb(G), 4.3MS(G), 5.5ML(M)

Felt at Sand Point (press report).

1 September (G) Southern Alaska
Origin time: 06 19 24.8
Epicenter: 61.22 N., 150.82 W.
Depth: 93 km
Magnitude: 3.8ML(G)
Intensity III: Anchorage (M).

6 September (G) Kodiak Island region
Origin time: 07 48 54.9
Epicenter: 56.84 N., 151.59 W.
Depth: Normal
Magnitude: 5.7mb(G), 5.9mb(B), 6.0mb(P)
5.6MS(G), 5.4MS(B), 6.0ML(M)
Intensity III: Kodiak (press report).

30 September (G) Central Alaska
Origin time: 09 48 05.1
Epicenter: 65.75 N., 145.06 W.
Depth: 15 km
Magnitude: 4.3ML(M)

Felt at Fairbanks (M).

4 October (G) Andreanof Islands, Aleutian Islands
Origin time: 07 46 52.8
Epicenter: 51.44 N., 176.62 W.
Depth: 38 km
Magnitude: 5.5mb(G), 5.0MS(G), 4.9MS(B)
5.2ML(M)

Felt on Adak Island (M).

4 November (G) Southern Alaska
Origin time: 00 04 56.5
Epicenter: 61.53 N., 151.62 W.
Depth: 120 km
Magnitude: None computed

Felt at Anchorage and Palmer (M).

5 November (G) Central Alaska
Origin time: 13 06 46.7
Epicenter: 67.81 N., 150.06 W.
Depth: Normal
Magnitude: 4.5ML(M)

Felt at Wiseman.

10 November (G) Southern Alaska
Origin time: 17 23 52.5

ALASKA--Continued

Epicenter: 60.90 N., 146.42 W.
Depth: 40 km
Magnitude: 4.8mb(G), 4.3ML(M)

Felt at Cordova and Valdez (M).

5 December (G) Southern Alaska
Origin time: 12 09 51.8
Epicenter: 60.26 N., 152.15 W.
Depth: 90 km
Magnitude: 4.9mb(G)
Intensity IV: Homer (press report).

16 December (G) Southern Alaska
Origin time: 09 34 44.8
Epicenter: 62.25 N., 150.97 W.
Depth: 98 km
Magnitude: None computed
Intensity II: Palmer and Sutton (M).

24 December (G) Near Islands, Aleutian Islands
Origin time: 23 31 03.0
Epicenter: 52.58 N., 173.29 E.
Depth: 72 km
Magnitude: 5.2mb(G)
Intensity IV: Shemya AFB, Shemya Island.

28 December (G) Southern Alaska
Origin time: 19 40 02.7
Epicenter: 61.58 N., 146.40 W.
Depth: 53 km
Magnitude: 3.9mb(G), 4.4ML(M)
Intensity III: Valdez (M).

ARIZONA

7 January (U) Southern Utah
Origin time: 16 21 46.6

See Utah listing.

5 March (U) Southern Utah
Origin time: 05 50 23.6

See Utah listing.

1 November (G) Northwestern Arizona
Origin time: 23 14 21.8
Epicenter: 36.03 N., 114.38 W.
Depth: 5 km
Magnitude: 3.3ML(G)
Intensity IV: Temple Bar.

19 November (G) Northwestern Arizona
Origin time: 20 57 34.6
Epicenter: 36.03 N., 112.01 W.
Depth: 5 km
Magnitude: 3.0ML(G)

Felt at the Grand Canyon (University of Northern Arizona--telephone report).

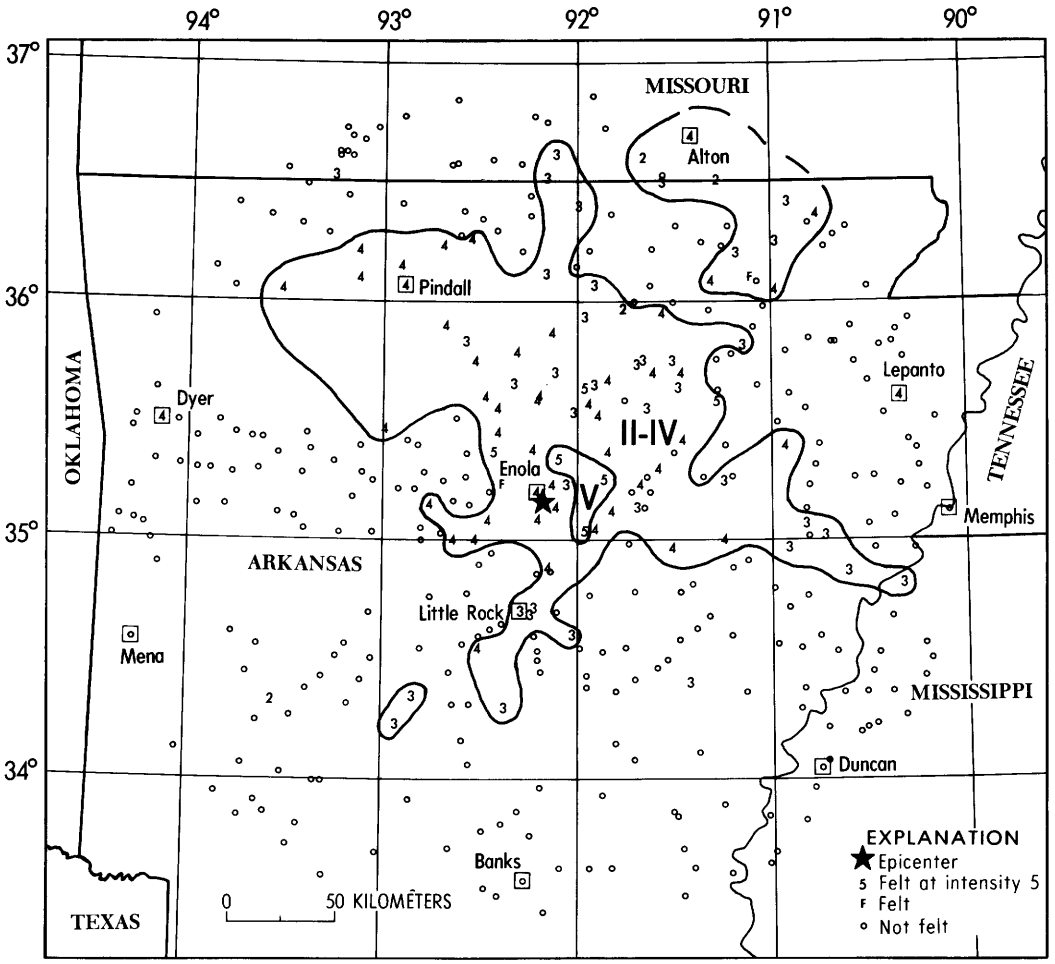

Figure 7. Isoseismal map for the central Arkansas earthquake of 21 January 1982, 00 33 54.8 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals are used to represent these intensities at specific sites. A dashed line is an inferred isoseismal.

ARKANSAS

18 January (K) Central Arkansas
Origin time: 01 23 07.3
Epicenter: 35.19 N., 92.25 W.
Depth: 2 km
Magnitude: 3.0Mn(T), 3.0MD(K)

This event and the ones listed below are part of a swarm of earthquakes which began on January 12 near Naylor. Many of these earthquakes were felt in the Enola-Naylor area, but the events above magnitude 2.6 are listed below.

Felt at Enola, Holland, Mount Vernon, and Naylor (press report).

18 January (K) Central Arkansas
Origin time: 02 32 12.6
Epicenter: 35.19 N., 92.26 W.

ARKANSAS--Continued

Depth: 2 km
Magnitude: 3.1Mn(T), 3.2Mn(V), 3.2MD(K)
Intensity IV: Mount Vernon (press report), Naylor (press report), Vilonia.
Intensity III: Conway, Enola, Holland (press report).

19 January (K) Central Arkansas
Origin time: 04 39 49.5
Epicenter: 35.19 N., 92.25 W.
Depth: 1 km
Magnitude: 3.5Mn(T), 3.4Mn(V), 3.5MD(K)
Intensity IV: Naylor and Mount Vernon (press report).
Felt: Enola, Holland, and Vilonia (press report).

20 January (K) Central Arkansas
Origin time: 14 01 30.7

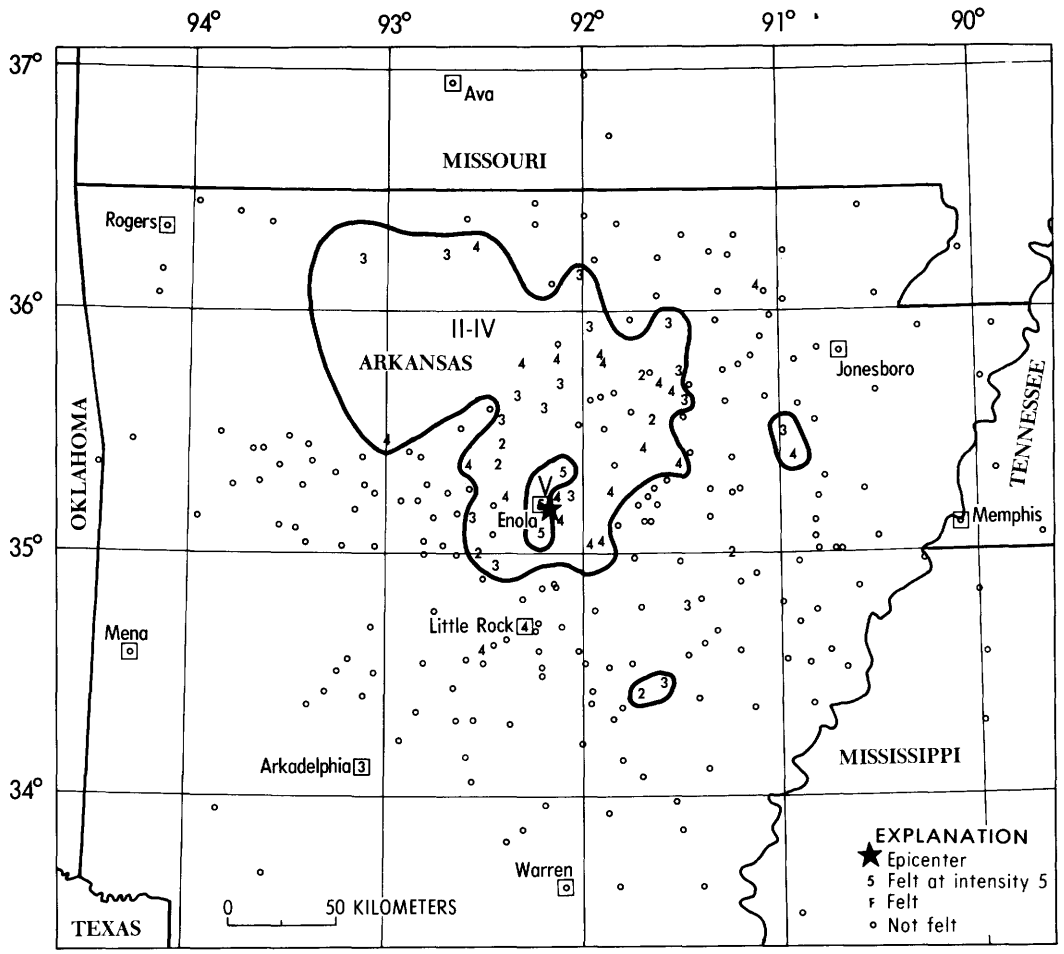

Figure 8. Isoseismal map for the central Arkansas earthquake of 24 January 1982, 03 22 44.7 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals are used to represent these intensities at specific sites.

ARKANSAS--Continued

Epicenter: 35.20 N., 92.21 W.
Depth: 0 km
Magnitude: 3.5Mn(T), 3.4Mn(V), 3.4MD(K)
Intensity IV: Beebe, Vilonia.
Intensity II: Mount Vernon.
Felt: Enola, Holland, and Naylor (press report).

21 January (K) Central Arkansas
Origin time: 00 33 54.8
Epicenter: 35.18 N., 92.21 W.
Depth: 3 km
Magnitude: 4.7Mn(T), 4.5Mn(K), 4.5mb(G)

This earthquake was felt over an area of approximately 31,000 km^2 of Arkansas, Mississippi, and Missouri (fig. 7). Many of the earthquakes from this swarm which began on January 12 were felt in the Enola-Naylor area. Only the events above magnitude 2.6 are listed here.

ARKANSAS--Continued

Intensity VI: On highway 36 west of Naylor-- hairline cracks in a concrete cellar, some tiles fell off a tile-lined well, a cracked fireplace, and minor cracks at the seams of sheetrock walls (K).
Intensity V: The most common effects at the places listed below were that few small objects overturned and fell; and windows, doors, or dishes were rattled.
Arkansas--Damascus, Drasco, Newport, Pangburn, Rosebud, Ward (few cracked windows).
Intensity IV:
Arkansas--Bauxite, Beebe, Bee Branch, Bigelow, Bradford, Cabot, Cave City, Choctaw, Clinton, Concord, Conway, Cotter, Cotton Plant, Des Arc, Dogpatch, Dyer, Edgemont, El Paso, Enola, Everton, Fox, Harriet, Harrison, Heber Springs, Hector, Hickory Ridge, Higden, Hunts-

ville (press report), Kensett, Kingston, Lepanto, Leslie, Litona, Marshall, McRae, Morrilton, Mount Vernon, Mountain View, Naylor (press report), Newark, Pindall, Quitman, Reyno, Rosie, Searcy, Smithville, Vilonia, Walnut Ridge, Wilburn, Yellville.
Missouri--Alton.

Intensity III:
Arkansas--Almyra, Austin, Batesville, Brady, Brickeys, Caldwell, Calico Rock, College Station, Conway (Hendrix College), Desha, Donaldson, Guion, Imboden, Keo, Little Rock, Madison, Malvern, Mammoth Spring, Mayflower (press report), Maynard, Melbourne, Oil Trough, Palestine, Patterson, Pleasant Plains, Pocahontas, Prim, Pruitt, Ridgedale, Romance, Sheridan, Shirley, Sulphur Rock, Sweet Home, Tumbling Shoals, Swifton, Viola, Wolf Bayou.
Mississippi--Robinsonville.
Missouri--Bakersfield, Caufield.

Intensity II:
Arkansas--Glenwood, Mount Pleasant.
Missouri--Koshkonong, Myrtle.

Felt:
Arkansas--Black Rock, Durham (press report), Greenbrier, Holland (press report), Newport (press report).

21 January (K) Central Arkansas
Origin time: 00 37 35.6
Epicenter: 35.16 N., 92.24 W.
Depth: 1 km
Magnitude: 3.0MD(K)

Felt in the Enola-Naylor area (K).

21 January (K) Central Arkansas
Origin time: 01 13 38.7
Epicenter: 35.14 N., 92.23 W.
Depth: 9 km
Magnitude: 3.1Mn(T), 3.1MD(K).

Felt at Enola, Holland, and Naylor (press report).

21 January (K) Central Arkansas
Origin time: 03 15 28.9
Epicenter: 35.16 N., 92.21 W.
Depth: 3 km
Magnitude: 2.6MD(K)

Felt in the Enola-Naylor area (K).

21 January (K) Central Arkansas
Origin time: 11 53 53.6
Epicenter: 35.15 N., 92.21 W.
Depth: 6 km
Magnitude: 2.8MD(K).

Felt at Naylor (K).

21 January (K) Central Arkansas
Origin time: 12 03 01.8
Epicenter: 35.20 N., 92.21 W.
Depth: 0 km
Magnitude: 2.9MD(K)

Felt at Naylor (K).

21 January (K) Central Arkansas
Origin time: 15 45 38.6
Epicenter: 35.19 N., 92.20 W.
Depth: 4 km
Magnitude: 4.1Mn(T), 3.6MD(K)
Intensity III: Palestine (press report).
Intensity II: Enola.

21 January (K) Central Arkansas
Origin time: 15 48 26.8
Epicenter: 35.21 N., 92.22 W.
Depth: 0 km
Magnitude: 2.7MD(K)

Felt at Enola (K).

22 January (K) Central Arkansas
Origin time: 23 54 22.8
Epicenter: 35.22 N., 92.21 W.
Depth: 0 km
Magnitude: 3.9Mn(T), 3.7Mn(V), 3.6MD(K).

Felt at Enola and Naylor (K).

24 January (K) Central Arkansas
Origin time: 03 22 44.7
Epicenter: 35.20 N., 92.22 W.
Depth: 4 km
Magnitude: 4.0Mn(T), 4.0Mn(V), 4.1Mn(K)

This earthquake was felt over an area of approximately 17,000 km^2 of northern Arkansas (fig. 8).

Intensity V:
Enola--hairline cracks in plaster walls, one report of cracked ceiling.
Rosebud--hairline cracks in plaster walls.
Vilonia--few cracked windows, hairline cracks in plaster walls.

Intensity IV: Beebe, Black Rock, Bryant, Center Ridge, Conway (Lakeview Acres Subdivision--press report), Cotter, El Paso, Fox, Greenbrier, Hanover, Hector, Hickory Ridge, Little Rock, Marcella, Mount Vernon, Pangburn, Pleasant Grove, Rosie, Russell, Salado, Steprock, Sweet Home (press report), Ward.

Intensity III: Arkadelphia, Austin, Cave City, Choctaw, DeValls Bluff, Edgemont, Fisher, Guion, Harrison, Hazen, Higden, Huntsville (press report), Mayflower, Menifee, Oil Trough, Prim, Pruitt, Romance, Shirley, Sulphur Rock, Valley Springs, Yellville.

Intensity II: Bee Branch, Cotton Plant, Damascus, Desha, Harriet, Humphrey, Pleasant Plains.
Felt: Kingston, Malvern, and Wesley (press report).

27 January (K) Central Arkansas
Origin time: 23 29 42.2
Epicenter: 35.20 N., 92.22 W.
Depth: 1 km
Magnitude: 3.2Mn(T), 2.8MD(K)
Intensity III: Enola and Naylor (K).

28 January (K) Central Arkansas
Origin time: 21 55 08.2
Epicenter: 35.18 N., 92.23 W.
Depth: 5 km
Magnitude: 2.3Mn(T), 2.4MD(K)

Felt at Naylor (K).

1 February (K) Central Arkansas
Origin time: 05 55 08.2
Epicenter: 35.18 N., 92.23 W.
Depth: 5 km
Magnitude: 3.3Mn(T), 3.3MD(K)
Intensity IV: Beebe, Enola (K), Mount Vernon, Naylor (K), Vilonia.
Intensity III: Greenbrier.

1 February (K) Central Arkansas
Origin time: 07 25 02.6
Epicenter: 35.19 N., 92.22 W.
Depth: 7 km
Magnitude: 3.4Mn(T), 3.2MD(K)
Intensity IV: Enola and Naylor (K).

2 February (S) Northeastern Arkansas
Origin time: 09 26 46.2
Epicenter: 35.91 N., 90.05 W.
Depth: 12 km
Magnitude: 3.4Mn(G), 3.5Mn(T)
Intensity IV:
Arkansas--Dell.
Missouri--Cardwell, Hornersville.
Intensity III:
Arkansas--Burdette, Luxora, Manila.
Felt: Blytheville-Gosnell area (K).

3 February (K) Central Arkansas
Origin time: 06 24 46.6
Epicenter: 35.19 N., 92.23 W.
Depth: 3 km
Magnitude: 2.6MD(K)

Felt near Enola (K).

12 February (K) Central Arkansas
Origin time: 05 32 12.2
Epicenter: 35.18 N., 92.23 W.
Depth: 3 km
Magnitude: 3.0Mn(T), 3.0MD(K)
Intensity V: Naylor (K).
Felt: Surrounding area (K).

ARKANSAS--Continued

16 February (K) Central Arkansas
Origin time: 12 38 20.5
Epicenter: 35.19 N., 92.23 W.
Depth: 5 km
Magnitude: 2.7MD(K)
Intensity IV: Naylor (K).

24 February (K) Central Arkansas
Origin time: 19 27 14.1
Epicenter: 35.20 N., 92.24 W.
Depth: 5 km
Magnitude: 4.0Mn(T), 3.7MD(K)
Intensity V: Enola--few small objects overturned, felt by many, Naylor (K).
Intensity IV: Mount Vernon.
Intensity III: Conway.
Intensity II: Greenbrier.
Felt: Heber Springs (press report).

1 March (K) Central Arkansas
Origin time: 00 12 09.5
Epicenter: 35.19 N., 92.21 W.
Depth: 8 km
Magnitude: 3.9Mn(T), 4.3Mn(G), 4.0Mn(K)
Intensity V: Jacksonport and Vilonia (hairline cracks in plaster and dry wall), Naylor (K).
Intensity IV: Enola, Mount Vernon, Rosebud, Weldon.
Intensity III: Alco, Conway, Fox, Greenbrier.
Intensity II: El Paso, Locust Grove, Oil Trough, Salado.
Felt: Heber Springs and Holland (press report).

1 March (K) Central Arkansas
Origin time: 06 04 09.1
Epicenter: 35.20 N., 92.23 W.
Depth: 6 km
Magnitude: 2.7MD(K)

Felt at Enola and Naylor (K).

10 March (K) Central Arkansas
Origin time: 03 01 42.6
Epicenter: 35.70 N., 92.22 W.
Depth: 7 km
Magnitude: 2.6MD(K)

Felt at Naylor (K).

31 May (K) Central Arkansas
Origin time: 17 49 20.4
Epicenter: 35.19 N., 92.20 W.
Depth: 1 km
Magnitude: 3.5Mn(T), 3.6Mn(G), 3.2Mn(S), 3.4MD(K)
Intensity IV: Enola, Naylor (press report).

31 May (K) Central Arkansas
Origin time: 18 21 19.8
Epicenter: 35.20 N., 92.23 W.
Depth: 2 km

Magnitude: 3.6Mn(T), 2.9Mn(S), 3.6MD(K)
Intensity IV: Enola.
Felt: Naylor (press report).

4 June (K) Central Arkansas
Origin time: 21 23 37.9
Epicenter: 35.22 N., 92.21 W.
Depth: 1 km
Magnitude: 2.6MD(K)

Felt near Enola (K).

12 June (K) Central Arkansas
Origin time: 15 00 27.6
Epicenter: 35.20 N., 92.26 W.
Depth: 4 km
Magnitude: 2.9MD(K)
Intensity IV: Naylor (K).
Felt: Enola (K).

26 June (K) Central Arkansas
Origin time: 15 56 05.7
Epicenter: 35.19 W., 92.24 W.
Depth: 5 km
Magnitude: 3.0MD(K).

Felt in the Enola-Naylor area (K).

30 June (K) Central Arkansas
Origin time: 16 21 55.4
Epicenter: 35.19 N., 92.23 W.
Depth: 7 km
Magnitude: 3.2MD(K)

Felt in the Enola-Naylor area (K).

5 July (K) Central Arkansas
Origin time: 03 07 44.6
Epicenter: 35.19 N., 92.23 W.
Depth: 5 km
Magnitude: 2.9MD(K)

Felt in the Enola-Naylor area (K).

5 July (K) Central Arkansas
Origin time: 04 13 49.8
Epicenter: 35.18 N., 92.23 W.
Depth: 6 km
Magnitude: 3.8Mn(T), 3.8MD(K)

Felt in Enola-Naylor and the surrounding area (K).

13 July (S) Northeastern Arkansas
Origin time: 04 30 53.1
Epicenter: 35.99 N., 89.86 W.
Depth: 13 km
Magnitude: 2.6Mn(G), 2.4MD(K)
Intensity III:
Arkansas--Blytheville.
Missouri--Holland.

9 August (K) Central Arkansas
Origin time: 11 12 31.6

Epicenter: 35.19 N., 92.24 W.
Depth: 4 km
Magnitude: 3.2Mn(T), 3.1MD(K)

Felt in the Enola and Naylor area (K).

25 September (K) Central Arkansas
Origin time: 23 17 05.5
Epicenter: 35.21 N., 92.23 W.
Depth: 5 km
Magnitude: 3.5Mn(T), 3.4MD(K), 3.0Mn(S)

Felt in the Enola-Naylor area (K).

27 September (K) Central Arkansas
Origin time: 10 22 32.5
Epicenter: 35.19 N., 92.23 W.
Depth: 5 km
Magnitude: 3.1Mn(G), 3.8Mn(T), 2.9MD(K)

Felt in the Enola-Naylor area (K).

Intensity III: Naylor (press report).

27 September (K) Central Arkansas
Origin Time: 17 17 12.3
Epicenter: 35.03 N., 92.22 W.
Depth: 2 km
Magnitude: 2.7MD(K)

Felt at Naylor (K).

29 October (K) Central Arkansas
Origin time: 19 27 39.2
Epicenter: 35.21 N., 92.21 W.
Depth: 1 km
Magnitude: 2.8MD(K)
Intensity III: Enola (K), Naylor (K).
Felt: Conway (K), Mount Vernon (K).

12 November (K) Central Arkansas
Origin time: 00 39 39.3
Epicenter: 35.20 N., 92.21 W.
Depth: 3 km
Magnitude: 2.6MD(K).

Felt near Enola (K).

17 November (K) Central Arkansas
Origin time: 19 00 43.2
Epicenter: 35.20 N., 92.23 W.
Depth: 1 km
Magnitude: 2.7MD(K)

Felt in the Enola-Naylor (K).

21 November (K) Central Arkansas
Origin time: 16 27 39.4
Epicenter: 35.20 N., 92.24 W.
Depth: 5 km
Magnitude: 2.9Mn(T), 2.8MD(K)
Intensity III: Naylor (press report).
Felt: Enola (press report).

ARKANSAS--Continued

21 November (K) Central Arkansas
Origin time: 16 35 28.6
Epicenter: 35.21 N., 92.22 W.
Depth: 1 km
Magnitude: 3.4Mn(T), 2.8Mn(S), 3.3MD(K)
Intensity IV: Naylor (press report).
Intensity III: Mount Vernon.
Felt: Enola (press report).

22 December (K) Central Arkansas
Origin time: 20 47 16.8
Epicenter: 35.20 N., 92.20 W.
Depth: 1 km
Magnitude: 2.8MD(K)

Felt at Enola (K).

CALIFORNIA

3 January (P) Southern California
Origin time: 00 37 32.1
Epicenter: 33.90 N., 117.97 W.
Depth: 13 km
Magnitude: 2.8ML(P)

Felt at Fullerton (P).

5 January (B) Northern California
Origin time: 03 26 57.0
Epicenter: 39.85 N., 120.57 W.
Depth: 23 km
Magnitude: 3.9ML(B)
Intensity IV: Quincy (press report).
Intensity III: Genesee, Greenville, Graeagle, and Portola (press report).

19 January (P) Southern California
Origin time: 05 35 38.0
Epicenter: 33.92 N., 118.48 W.
Depth: 5 km
Magnitude: 2.5ML(P)

Felt at Hollywood and Mar Vista (P).

19 January (B) Central California
Origin time: 07 13 09.3
Epicenter: 37.84 N., 122.25 W.
Depth: 10 km
Magnitude: 3.0ML(B)

Felt in Alameda, Contra Costa, and San Francisco Counties (press report).

Intensity V: Piedmont (few small objects were overturned and fell, hairline cracks in plaster and dry wall, small landslides, felt by many).
Intensity IV: Berkeley (press report).
Felt: Lafayette, Livermore, Martinez, and Walnut Creek (press report).

CALIFORNIA--Continued

24 January (B) California-Nevada border region
Origin time: 15 44 07.7
Epicenter: 37.37 N., 117.85 W.
Depth: 23 km
Magnitude: 4.3ML(B), 4.4ML(P)
Intensity III:
California--Bishop, Keeler.
Nevada--Dyer.
Intensity II:
California--Shaver Lake.

27 January (B) Central California
Origin time: 23 42 02.3
Epicenter: 37.00 N., 121.71 W.
Depth: 8 km
Magnitude: 3.0ML(B)
Intensity II: Watsonville.

2 February (P) Southern California
Origin time: 18 00 04.9
Epicenter: 33.75 N., 119.23 W.
Depth: 10 km
Magnitude: 3.6ML(P)

Felt at North Hollywood (P).

7 February (P) Central California
Origin time: 08 10 20.8
Epicenter: 35.36 N., 118.48 W.
Depth: 11 km
Magnitude: 3.8ML(P), 3.8ML(B).
Intensity IV: Edison, Keene, Lake Isabella.

7 February (B) Northern California
Origin time: 12 27 15.4
Epicenter: 38.78 N., 122.71 W.
Depth: 4 km
Magnitude: 2.9ML(B)

Felt in the epicentral area (B).

8 February (P) Southern California
Origin time: 23 53 28.6
Epicenter: 34.25 N., 118.41 W.
Depth: 7 km
Magnitude: 2.6ML(P)

Felt at San Fernando and Van Nuys (press report).

9 February (B) Northern California
Origin time: 15 24 06.5
Epicenter: 40.54 N., 124.40 W.
Depth: 23 km
Magnitude: 3.6ML(B)

Felt at Ferndale (B).

11 February (B) Central California
Origin time: 08 16 33.2
Epicenter: 36.82 N., 121.28 W.

Depth: 4 km
Magnitude: 3.2ML(B)

Felt at Tres Pinos and in parts of San Benito County (B).

16 February (B) Central California
Origin time: 01 42 17.3
Epicenter: 36.82 N., 121.59 W.
Depth: 3 km
Magnitude: 3.0ML(B)
Intensity II: Salinas.

16 February (P) Southern California
Origin time: 19 10 51.1
Epicenter: 34.11 N., 117.33 W.
Depth: 19 km
Magnitude: 3.1ML(P)
Intensity II: Fontana (press report), San Bernardino.

18 February (P) Central California
Origin time: 05 06 06.8
Epicenter: 35.80 N., 117.73 W.
Depth: 6 km
Magnitude: 3.6ML(P)

Felt at Inyokern (P).

19 February (B) Northern California
Origin time: 04 53 15.7
Epicenter: 39.91 N., 120.73 W.
Depth: 10 km
Magnitude: 4.0ML(B)
Intensity V:
Quincy--few cracked windows, few small objects overturned and fell, felt by all.
Spring Garden--few small objects overturned and fell, felt by many.
Intensity IV: Alleghany, Chilcoot, Cromberg, Greenville, Keddie, La Porte, Portola, Taylorsville, Vinton.
Intensity III: Blairsden, Calpine, Clio, Downieville, Goodyears Bar, Janesville, Oroville (press report), Sierra City, Twain.
Intensity II: Beckwourth (press report), Grass Valley (press report).

20 February (P) Central California
Origin time: 17 52 06.7
Epicenter: 35.78 N., 117.72 W.
Depth: 6 km
Magnitude: 3.7ML(P), 3.8ML(B)
Intensity III: Inyokern, Ridgecrest.

22 February (P) Southern California
Origin time: 09 03 03.5
Epicenter: 34.12 N., 116.39 W.
Depth: 4 km
Magnitude: 3.0ML(P)

Felt at Joshua Tree and Yucca Valley.

22 February (P) Southern California
Origin time: 14 06 08.2
Epicenter: 34.12 N., 116.39 W.
Depth: 5 km
Magnitude: 3.2ML(P)

Felt at Joshua Tree and Yucca Valley.

25 February (P) Southern California
Origin time: 05 19 42.2
Epicenter: 34.11 N., 116.39 W.
Depth: 4 km
Magnitude: 3.8ML(P)
Intensity V:
Landers--few small objects were overturned and fell.
Yucca Valley--hairline cracks in plaster walls, few glassware were broken, few small objects were overturned and fell; it was felt by many.
Intensity IV: Anza, Cathedral City, Joshua Tree, Morongo Valley, North Palm Springs, Palm Springs, Thousand Palms.
Intensity III: Palomar Mountain, San Bernardino, Twentynine Palms.

28 February (B) Northern California
Origin time: 20 17 51.5
Epicenter: 38.79 N., 122.77 W.
Depth: 5 km
Magnitude: 3.3ML(B)

Felt at Cobb Mountain and in Lake and Sonoma Counties (B).

28 February (P) Southern California
Origin time: 23 18 20.0
Epicenter: 34.47 N., 119.50 W.
Depth: 3 km
Magnitude: 3.4ML(P)

Felt at Oxnard (P).

1 March (P) Central California
Origin time: 03 10 22.3
Epicenter: 35.78 N., 117.75 W.
Depth: 4 km
Magnitude: 4.1mb(G), 4.2ML(P), 4.4ML(B)
Intensity V: Ridgecrest--few items of merchandise were thrown from store shelves, few glassware were broken, few cracked windows, few small objects were overturned and fell; it was felt by many.
Intensity IV: Inyokern, Little Lake.

6 March (B) Central California
Origin time: 13 11 14.0
Epicenter: 37.05 N., 121.47 W.
Depth: 7 km
Magnitude: 3.0ML(B)

Felt at Gilroy and Morgan Hill (B).

7 March (P) Central California
Origin time: 19 13 38.2
Epicenter: 35.76 N., 117.74 W.
Depth: 4 km
Magnitude: 3.0ML(P)

Felt at the China Lake Naval Weapons Station (telegraphic report).

7 March (P) Central California
Origin time: 20 50 12.8
Epicenter: 35.76 N., 117.75 W.
Depth: 2 km
Magnitude: 4.3mb(G), 4.9ML(B), 4.3ML(P)

This earthquake is one of a swarm of events in this area. Roads were reported cracked about 4 miles north of highway 178 at the north end of SNORT track. There was some minor damage to buildings and glass at Charlie Range on the China Lake Naval Weapons Center. Many of the aftershocks were felt on the Weapons Center (see table 1).

Intensity V: China Lake Naval Weapons Center--few cracked windows, felt by many.
Intensity IV: Argus, Caliente, Inyokern, Lake Isabella, Mountain Mesa, Ridgecrest.
Intensity III: California City, Onyx, Trona.
Intensity II: Cantil, Delkern.

7 March (P) Central California
Origin time: 20 50 59.9
Epicenter: 35.76 N., 117.76 W.
Depth: 2 km
Magnitude: 4.7mb(G), 5.0ML(B), 4.5ML(P)

This event followed the one at 20 50 12.8 UTC so closely that the effects of the two earthquakes are inseparable. The maximum intensity is V for both events.

Felt at Inyokern and Ridgecrest (P).

8 March (P) Central California
Origin time: 14 42 46.0
Epicenter: 35.75 N., 117.73 W.
Depth: 4 km
Magnitude: 4.2ML(B), 4.0ML(P)
Intensity IV: China Lake Naval Weapons Center (telegraphic report), Earlimart.

11 March (P) Imperial Valley
Origin time: 12 29 24.0
Epicenter: 32.90 N., 115.49 W.
Depth: 10 km
Magnitude: 2.3ML(P)

Felt at Brawley (P).

12 March (B) Central California
Origin time: 23 07 45.1
Epicenter: 37.11 N., 121.52 W.

CALIFORNIA--Continued

Depth: 5 km
Magnitude: 2.7ML(B)

Felt in the Coyote Lake area (B).

14 March (B) Central California
Origin time: 09 58 51.2
Epicenter: 35.19 N., 120.63 W.
Depth: 5 km
Magnitude: 3.5ML(B), 3.4ML(P)
Intensity V: Arroyo Grande--few merchandise items were thrown from store shelves, few glassware were broken; few small objects were overturned and fell, it awakened few.
Intensity IV: Avila Beach, San Luis Obispo.
Intensity III: Halcyon.
Felt: Grover City and Pismo Beach (B).

16 March (P) Central California
Origin time: 07 08 13.1
Epicenter: 36.60 N., 117.06 W.
Depth: 6 km
Magnitude: 3.5ML(P)

Felt at Death Valley (P).

16 March (P) Central California
Origin time: 08 47 00.8
Epicenter: 36.60 N., 117.03 W
Depth: 6 km
Magnitude: 4.1ML(P)

Felt at Death Valley (P).

16 March (B) Northern California
Origin time: 11 52 46.4
Epicenter: 39.59 N., 123.06 W.
Depth: 2 km
Magnitude: 3.2ML(B)
Intensity IV: Willits.
Intensity II: Eck.

16 March (B) Northern California
Origin time: 12 06 10.0
Epicenter: 39.61 N., 123.06 W.
Depth: 2 km
Magnitude: 2.8ML(B)
Intensity III: Willits.

16 March (P) Imperial Valley
Origin time: 22 55 05.6
Epicenter: 32.78 N., 115.46 W
Depth: 11 km
Magnitude: 3.1ML(P)

Felt at Brawley (P).

17 March (B) Northern California
Origin time: 09 32 03.3
Epicenter: 40.40 N., 124.15 W.
Depth: 25 km
Magnitude: 3.6ML(B)
Intensity IV: Rio Dell, Scotia.
Intensity III: Honeydew, Miranda.

20 March (B) Northern California
Origin time: 18 39 43.8
Epicenter: 38.82 N., 122.82 W.
Depth: 5 km
Magnitude: 2.8ML(B)

Felt in the Clear Lake area (B).

22 March (P) Southern California
Origin time: 08 53 28.6
Epicenter: 33.06 N., 116.21 W.
Depth: 5 km
Magnitude: 4.4mb(G), 4.5ML(P).

Felt from Palm Springs south to the Mexican border.

Intensity IV: Alpine, Borrego Springs, Boulevard, Campo, Descanso, Jacumba, Lake Cuyamaca, Mount Laguna, North Shore, Palomar Mountain, Pine Valley, Ramona, Ranchita, Salton City, Seeley, Warner Springs, Westmorland.
Intensity III: Anza, Brawley (press report), El Centro, Guatay, Palm Springs.
Intensity II: Plaster City, Tecate.
Felt: Imperial, Santa Ysabel.

24 March (B) Northern California
Origin time: 04 20 31.3
Epicenter: 38.48 N., 122.64 W.
Depth: 5 km
Magnitude: 3.0ML(B)
Intensity IV: Santa Rosa.

25 March (B) Northern California
Origin time: 02 27 32.5
Epicenter: 38.80 N., 122.80 W.
Depth: 2 km
Magnitude: 3.4ML(B)
Intensity IV: Cobb, Finley, Geyserville, Loch Lomond.
Intensity III: Anderson Springs, Middletown.
Felt: Healdsburg (B).

26 March (B) Central California
Origin time: 13 24 00.5
Epicenter: 37.80 N., 122.21 W.
Depth: 4 km
Magnitude: 3.0ML(B)
Intensity IV: Alameda, Oakland, San Francisco, Woodacre.
Intensity III: Half Moon Bay, San Leandro.
Intensity II: San Mateo.
Felt: Berkeley, Lafayette (press report), Orinda (press report), Palo Alto, Piedmont (press report), San Lorenzo.

28 March (G) Central California
Origin time: 13 50 31.1
Epicenter: 37.80 N., 122.20 W.
Depth: 2 km
Magnitude: 2.9ML(B)
Intensity III: Alameda.
Felt: Oakland.

CALIFORNIA--Continued

29 March (P) Southern California
Origin time: 23 29 41.6
Epicenter: 34.11 N., 116.39 W.
Depth: 4 km
Magnitude: 3.4ML(P)
Intensity III: Morongo Valley.
Felt: Yucca Valley (P).

31 March (P) Central California
Origin time: 20 02 23.9
Epicenter: 35.72 N., 118.40 W.
Depth: 9 km
Magnitude: 2.9ML(P)

Felt at Lake Isabella Dam (P).

3 April (B) Central California
Origin time: 19 32 25.8
Epicenter: 37.80 N., 122.20 W.
Depth: 4 km
Magnitude: 2.4ML(B)

Felt in the Oakland-San Francisco Bay area (press report).

8 April (B) Northern California
Origin time: 03 54 12.7
Epicenter: 39.47 N., 123.33 W.
Depth: 2 km
Magnitude: 3.0ML(B)
Intensity IV: Potter Valley, Ukiah, Willits.

8 April (P) Southern California
Origin time: 15 03 04.0
Epicenter: 34.19 N., 118.64 W.
Depth: 4 km
Magnitude: 2.6ML(P)

Felt at Woodland Hills (P).

12 April (B) Northern California
Origin time: 20 21 54.8
Epicenter: 38.50 N., 122.72 W.
Depth: 4 km
Magnitude: 2.5ML(B)

Felt at Santa Rosa (B).

13 April (P) Southern California
Origin time: 11 02 12.2
Epicenter: 34.05 N., 118.96 W.
Depth: 17 km
Magnitude: 4.2mb(G), 4.0ML(P)
Intensity V:
Agoura--hairline cracks in interior plaster walls, building shook strongly.
Camarillo--pictures were swung out of place, few small objects were overturned, building shook strongly.
Malibu--few merchandise items were thrown from store shelves, few small objects were overturned and fell, few dishes and glasses were broken.
Intensity IV: Canoga Park, Chatsworth, Glendale, Santa Monica, Somis, Thousand Oaks.

Felt: El Segundo (P), Lynwood (P), Westlake Village (P), Woodland Hills (P).

13 April (P) Southern California
Origin time: 15 00 42.2
Epicenter: 33.91 N., 117.96 W.
Depth: 12 km
Magnitude: 2.2ML(P)

Felt at Fullerton (P).

15 April (B) California-Nevada border region
Origin time: 21 52 09.1

See Nevada listing.

24 April (B) Central California
Origin time: 14 35 44.7
Epicenter: 36.84 N., 121.41 W.
Depth: 10 km
Magnitude: 3.1ML(B)

Felt at Hollister (B).

25 April (B) Central California
Origin time: 02 59 35.5
Epicenter: 37.42 N., 121.76 W.
Depth: 8 km
Magnitude: 3.1ML(B)

Felt in the San Jose area (B).

25 April (P) Imperial Valley
Origin time: 15 56 08.8
Epicenter: 32.95 N., 115.55 W.
Depth: 15 km
Magnitude: 2.4ML(P)

Felt in the Imperial Valley (P).

27 April (P) Central California
Origin time: 15 42 40.2
Epicenter: 35.77 N., 117.73 W.
Depth: 5 km
Magnitude: 4.0ML(P), 4.2ML(B)
Intensity IV: China Lake, Little Lake, Onyx, Ridgecrest.

30 April (P) Southern California
Origin time: 06 43 37.0
Epicenter: 34.91 N., 120.36 W.
Depth: 2 km
Magnitude: 3.8ML(P), 3.8ML(B)
Intensity IV: Santa Maria.
Felt: Santa Barbara (press report).

2 May (B) Central California
Origin time: 13 37 53.9
Epicenter: 37.05 N., 121.48 W.
Depth: 5 km
Magnitude: 3.1ML(B)

Felt at San Jose (press report).

CALIFORNIA--Continued

4 May (B) Central California
Origin time: 05 29 10.2
Epicenter: 36.83 N., 121.60 W.
Depth: 2 km
Magnitude: 2.9ML(B).

Felt in the Hollister area (B).

6 May (B) Central California
Origin time: 11 05 26.9
Epicenter: 36.55 N., 121.19 W.
Depth: 4 km
Magnitude: 3.1ML(B)

Felt in Bear Valley (B).

7 May (G) Mammoth Lakes area
Origin time: 12 17 41.7
Epicenter: 37.66 N., 118.90 W.
Depth: 5 km
Magnitude: 3.2ML(B), 3.4ML(P)

This was the first event in a swarm of 20 earthquakes which were felt in the Mammoth Lakes area. The radio station at Bishop was briefly knocked off the air and electricity flickered in parts of Bridgeport (press report).

Intensity IV: Bishop and Bridgeport (press reports).
Felt: Lake Crowley area (P).

7 May (B) Owens Valley area
Origin time: 12 29 53.7
Epicenter: 37.65 N., 118.97 W.
Depth: 2 km
Magnitude: 3.3ML(B), 3.2ML(P)

Felt at Bishop and Bridgeport (press reports) and in the Lake Crowley area (P).

7 May (G) Mammoth Lakes area
Origin time: 12 44 38.8
Epicenter: 37.65 N., 118.94 W.
Depth: 5 km
Magnitude: 3.0ML(G)

Felt at Bishop and Bridgeport (press reports) and in the Lake Crowley area (P).

8 May (B) Mammoth Lakes area
Origin time: 03 57 12.6
Epicenter: 37.65 N., 118.94 W.
Depth: 5 km
Magnitude: 3.8ML(B), 4.0ML(P)

Felt in the Mammoth Lakes area (B).

11 May (B) Central California
Origin time: 22 37 29.9
Epicenter: 36.62 N., 121.29 W.

Depth: 7 km
Magnitude: 3.6ML(B)

Felt in the Hollister area (B).

22 May (B) Central California
Origin time: 03 32 03.7
Epicenter: 37.05 N., 121.48 W.
Depth: 6 km
Magnitude: 3.7ML(B)
Intensity II: Hollister, Santa Cruz.
Felt: Gilroy (B), Morgan Hill (B).

29 May (B) Northern California
Origin time: 13 02 24.6
Epicenter: 38.80 N., 122.82 W.
Depth: 3 km
Magnitude: 4.3mb(G), 4.0ML(B)

Felt in Lake, Napa, and Sonoma Counties (B).

Intensity V:
Finley--hairline cracks in interior plaster walls, few small objects were overturned, hanging pictures were swung out of place.
Cobb--few small objects were overturned.
Intensity IV: Clear Lake (press report), Geyserville, Kelseyville, Lakeport (press report).
Intensity III: Healdsburg, St. Helena.
Felt: Loch Lomond.

29 May (B) Northern California
Origin time: 13 07 23.3
Epicenter: 38.84 N., 122.83 W.
Depth: 5 km
Magnitude: 2.9ML(B)

Felt at Cobb (B).

31 May (P) Central California
Origin time: 15 42 03.5
Epicenter: 35.72 N., 118.40 W.
Depth: 9 km
Magnitude: 3.7ML(B), 3.7ML(P)

Felt at Lake Isabella (P).

4 June (B) Northern California
Origin time: 03 12 50.1
Epicenter: 39.72 N., 120.10 W.
Depth: 12 km
Magnitude: 3.3ML(B)
Intensity IV: Vinton.

4 June (P) Owens Valley area
Origin time: 11 59 02.7
Epicenter: 37.49 N., 118.33 W.
Depth: 6 km
Magnitude: 3.0ML(G)
Intensity IV: Bishop (press report).

4 June (B) Owens Valley area
Origin time: 16 41 48.5

CALIFORNIA--Continued

Epicenter: 37.48 N., 118.38 W.
Depth: 5 km
Magnitude: 4.3ML(B), 4.2ML(P)
Intensity IV: Bishop (few merchandise items were thrown from store shelves--press report).
Intensity III:
California--Crowley Lake.
Nevada--Dyer.

5 June (B) Lake Tahoe area
Origin time: 09 54 23.2
Epicenter: 38.79 N., 119.81 W.
Depth: 12 km
Magnitude: 3.9ML(B)
Intensity IV:
California--Markleeville.
Nevada--Genoa, Zephyr Cove.
Intensity III:
California--Kirkwood, South Lake Tahoe.

6 June (B) Northern California
Origin time: 07 00 09.4
Epicenter: 39.51 N., 121.53 W.
Depth: 10 km
Magnitude: 2.9ML(G), 2.8ML(B)
Intensity III: Oroville (press report).
Felt: Chico and Paradise (press reports).

8 June (P) Central California
Origin time: 20 05 35.8
Epicenter: 35.76 N., 117.72 W
Depth: 5 km
Magnitude: 3.4ML(P)
Intensity V: Naval Weapons Center (China Lake)--glass windows were shattered (press report).

9 June (P) Southern California
Origin time: 03 27 09.2
Epicenter: 33.94 N., 116.89 W.
Depth: 14 km
Magnitude: 3.2ML(P)

Felt at Palm Springs (P).

13 June (B) Central California
Origin time: 00 04 35.2
Epicenter: 37.02 N., 121.47 W.
Depth: 6 km
Magnitude: 3.1ML(B)

Felt at Gilroy (B).

14 June (B) Northern California
Origin time: 20 29 18.5
Epicenter: 38.78 N., 122.92 W.
Depth: 5 km
Magnitude: 3.0ML(B)

Felt at Cobb (B).

15 June (P) Southern California
Origin time: 23 49 21.3
Epicenter: 33.56 N., 116.67 W.

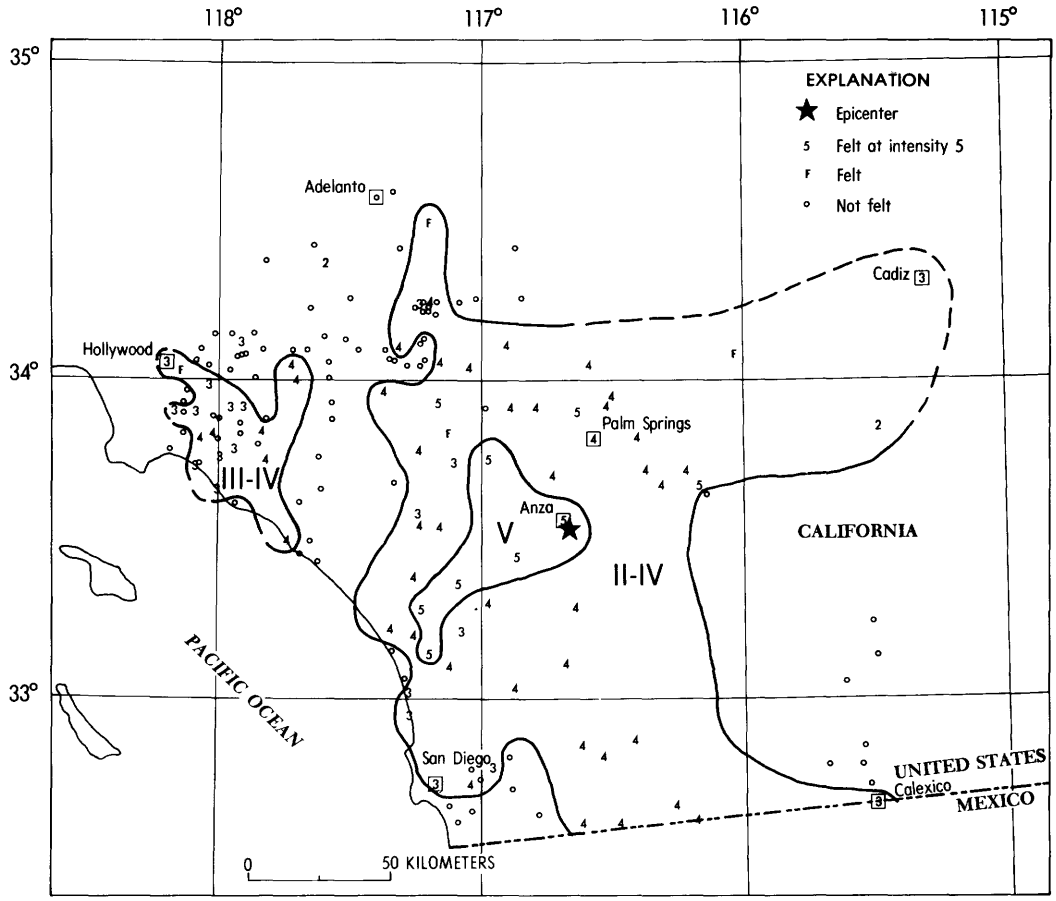

Figure 9. Isoseismal map for the southern California earthquake of 15 June 1982, 23 49 21.3 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals are used to represent these intensities at specific sites. A dashed line id an inferred isoseismal.

CALIFORNIA--Continued

Depth: 12 km
Magnitude: 4.5mb(G), 4.8ML(B), 4.8ML(P)

This earthquake was felt over an area of approximately 26,500 km^2 in Imperial, Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties (fig. 9) the quake was felt by everyone at a Girl Scout camp near Lake Hemet (8 miles north of Anza). Some aftershocks were felt in the hour following this earthquake (see table 1).

Intensity V:

Anza--many merchandise items were thrown from store shelves but few were broken (press report), many small objects fell, hanging objects or doors were swung moderately, hanging pictures were swung.
Bonsall--hanging pictures fell.
Cathedral City--few windows were cracked, few small objects were overturned and

CALIFORNIA--Continued

fell, few glassware and dishes were broken, few merchandise items were thrown from store shelves, hairline cracks in interior plaster or stucco and drywall walls, hanging pictures were swung out of place, hanging objects or doors were swung moderately.
Coachella--few windows were cracked, few small objects were overturned and fell, few glassware and dishes were broken.
Hemet--many pictures fell off the walls, dishes were broken (press report).
Moreno--hairline cracks in interior drywall walls, building shook strongly.
Pala--few small objects were overturned and fell, few glassware and dishes were broken, few merchandise items were thrown from store shelves, hanging pictures were swung out of place.
San Marcos--few small objects were overturned, building shook strongly.
White Water--few small objects were over-

turned, hanging pictures were swung out of place or fell, building shook strongly.
Intensity IV: Aguanga, Atwood, Banning, Boulevard, Cabazon, Campo, Chino, Cypress, Descanso, Desert Hot Springs, Escondido, Fallbrook, Forest Falls, Guyamaca, Indio (hanging pictures were swung out of place), Jacumba, Laguna Niguel (water was splashed onto sides of lakes, ponds, or swimming pools), Lake Arrowhead, La Quinta, Lemon Grove (hanging pictures were swung out of place), Los Alamitos, March AFB, Mentone, Miramar NAS, Morongo Valley, Mountain Center, Mount Laguna, Murrieta, North Palm Springs, Palm Desert (boulders were dislodged and rolled into ravines in the San Jacinto Mountains), Palm Springs, Pauma Valley, Perris, Pine Valley, Pomona (hanging pictures were swung out of place), Potrero, Ramona, Riverside, San Bernardino, San Luis Rey, San Marcos, Santa Ysabel, Thousand Palms, Tustin (few small objects were overturned), Vista, Warner Springs (building shook strongly), Yucaipa (buildings shook slightly to strongly, hanging objects or doors were swung moderately).
Intensity III: Azusa, Brea, Cadiz, Calexico, Cardiff-by-the-Sea, Cedar Glen, Del Mar, El Cajon, Garden Grove, Hollywood (press report), Homeland, Huntington Beach, La Habra, Midway City, Norwalk, Paramount, San Diego, Surfside, Valley Center, Whittier, Wildomar.
Intensity II: Eagle Mountain, Phelan.
Felt: Apple Valley (P), Lakeview, Los Angeles (P), Twentynine Palms (P).

16 June (P) Imperial Valley
Origin time: 11 20 18.4
Epicenter: 33.55 N., 116.66 W.
Depth: 12 km
Magnitude: 3.2ML(P)

Felt at El Centro (P).

19 June (B) Central California
Origin time: 10 17 33.6
Epicenter: 36.51 N., 121.06 W.
Depth: 9 km
Magnitude: 4.1 ML(B)
Intensity IV: Carmel Valley, Jolon.
Intensity III: Monterey.
Felt: King City, San Benito (B).

21 June (B) Northern California
Origin time: 06 43 38.1
Epicenter: 41.20 N., 121.92 W.
Depth: 11 km
Magnitude: 4.1mb(G), 4.3ML(B)
Intensity IV: Castella, Dunsmuir, McCloud, Montgomery Creek, Mount Shasta, Oak Run, Weed (cans were toppled from shelves in many homes--press report).

22 June (B) Mammoth Lakes area
Origin time: 01 05 27.5
Epicenter: 37.55 N., 118.91 W.
Depth: 2 km
Magnitude: 3.5ML(B)

Felt at Mammoth Lakes (B).

22 June (P) Southern California
Origin time: 04 19 37.4
Epicenter: 34.89 N., 120.37 W.
Depth: 6 km
Magnitude: 2.9ML(P)
Intensity III: Santa Maria (press report).

23 June (B) Northern California
Origin time: 11 22 26.1
Epicenter: 40.34 N., 124.34 W.
Depth: 5 km
Magnitude: 3.3ML(B)

Felt in the Petrolia area (B).

24 June (B) Mammoth Lakes area
Origin time: 10 08 01.1
Epicenter: 37.46 N., 118.85 W.
Depth: 3 km
Magnitude: 3.8ML(B), 3.3ML(P)

Felt in the Mammoth Lakes area (B).

25 June (B) Central California
Origin time: 03 58 23.6
Epicenter: 35.94 N., 120.56 W.
Depth: 9 km
Magnitude: 4.1mb(G), 3.7MS(G), 4.0ML(B), 4.1ML(P)
Intensity IV: Cambria, Cholame (B), Coalinga, Parkfield (B), San Miguel, Santa Margarita.
Intensity III: Atascadero, Bradley, Paso Robles, Templeton.
Intensity II: San Ardo.
Felt: Caruthers.

27 June (B) Central California
Origin time: 05 20 02.2
Epicenter: 35.94 N., 120.54 W.
Depth: 10 km
Magnitude: 3.5ML(P), 3.3ML(B)

Felt in the Cholame Valley area (B).

4 July (P) Central California
Origin time: 12 44 03.4
Epicenter: 35.77 N., 117.73 W.
Depth: 8 km
Magnitude: 3.8ML(P), 3.7ML(B)
Intensity IV: China Lake, Ridgecrest.

7 July (P) Southern California
Origin time: 08 44 33.7

Epicenter: 34.15 N., 116.70 W.
Depth: 11 km
Magnitude: 3.6ML(P)

Felt at Palm Desert and Lucerne Valley (P) and at Palm Springs (press report).

18 July (B) Central California
Origin time: 10 16 41.5
Epicenter: 36.83 N., 121.49 W.
Depth: 10 km
Magnitude: 3.5ML(B)

Felt at Hollister (B).

18 July (P) Southern California
Origin time: 11 25 50.9
Epicenter: 33.83 N., 117.83 W.
Depth: 8 km
Magnitude: 3.0ML(P)
Intensity IV: Anaheim (press report), Santa Ana.

18 July (B) Northern California
Origin time: 22 45 24.3
Epicenter 40.00 N., 122.61 W.
Depth: 13 km
Magnitude: 3.7ML(B)

Felt at Paskenta (B).

29 July (P) Southern California
Origin time: 05 50 08.6
Epicenter: 33.95 N., 118.72 W.
Depth: 11 km
Magnitude: 3.2ML(P)
Intensity V: West Los Angeles--some glassware was broken, few small objects were overturned and fell, trees and bushes were slightly shaken, felt by several.
Intensity IV: Agoura.
Intensity III: El Monte, Hawthorne, North Hollywood, Thousand Oaks, Paramount, Palms.

4 August (B) Northern California
Origin time: 15 41 31.5
Epicenter: 38.92 N., 122.67 W.
Depth: 6 km
Magnitude: 3.0ML(B)
Intensity V: Clear Lake Oaks--a few small objects fell and a few windows were cracked.
Intensity IV: Clear Lake Highlands.
Intensity III: Middletown.
Felt: Lakeport (B).

5 August (P) Southern California
Origin time: 04 02 19.8
Epicenter: 33.26 N., 116.42 W.
Depth: 3 km
Magnitude: 3.5ML(P)

Felt at Borrego Springs (P).

CALIFORNIA--Continued

5 August (B) Mammoth Lakes area
Origin time: 15 38 31.0
Epicenter: 37.63 N., 118.91 W.
Depth: 1 km
Magnitude: 3.4ML(B), 3.2ML(P)

Felt at Mammoth Lakes (B).

10 August (B) Central California
Origin time: 02 11 29.8
Epicenter: 36.59 N., 121.24 W.
Depth: 7 km
Magnitude: 3.9mb(G), 4.5ML(B)

Felt in Fresno, Monterey, San Benito, and Santa Cruz Counties (B).

Intensity IV: Felton, Gonzales, Hollister, Monterey, Pacific Grove, Soledad.
Intensity III: Big Sur, Boulder Creek, Carmel Valley, Castroville, Coalinga, Mount Herman, Paicines, Moss Landing, Salinas, San Juan Bautista, Soquel.
Felt: Watsonville (B).

10 August (B) Central California
Origin time: 02 24 00.3
Epicenter: 36.60 N., 121.26 W.
Depth: 6 km
Magnitude: 3.4ML(B)
Intensity III: Salinas (press report).
Felt: Hollister (B).

10 August (P) Imperial Valley area
Origin time: 18 37 04.2
Epicenter: 32.92 N., 115.53 W.
Depth: 15 km
Magnitude: 3.6ML(P)
Intensity IV: Brawley (press report), El Centro, Imperial, Jacumba (a pan of boiling water slid from a stove and scalded a child), Seeley.
Intensity III: Heber.

11 August (B) Central California
Origin time: 07 46 43.2
Epicenter: 36.63 N., 121.31 W.
Depth: 9 km
Magnitude: 4.6mb(G), 4.6ML(B)
Intensity V: Gonzales--a few windows were cracked, hanging pictures were swung out of place, felt by all.
Intensity IV: Big Sur, Bradley, Carmel Valley, Coalinga, Hollister, King City, Jolon, Monterey, Pacific Grove, Paicines, San Ardo, Santa Cruz, Soledad, Tres Pinos.
Intensity III: Castroville, Felton, Mount Hermon, San Miguel, Seaside.
Felt: Salinas (B), Watsonville (B).

14 August (P) Southern California
Origin time: 02 37 59.1
Epicenter: 34.17 N., 117.34 W.
Depth: 5 km
Magnitude: 3.2ML(P)

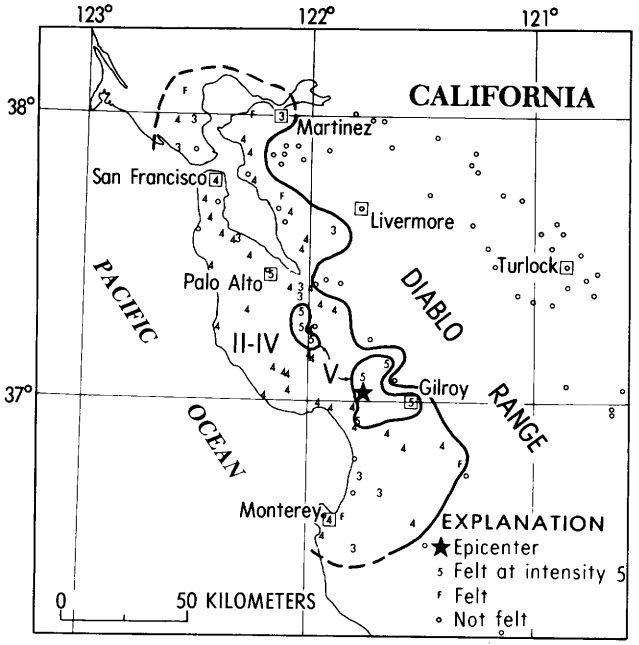

Figure 10. Isoseismal map for the central California earthquake of 18 August 1982, 08 43 49.8 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals are used to represent these intensities at specific sites. A dashed line is an inferred isoseismal.

CALIFORNIA--Continued

Intensity IV: Colton, San Bernardino (press report).

15 August (B) Mammoth Lakes area
Origin time: 18 58 10.8
Epicenter: 37.48 N., 118.90 W.
Depth: 5 km
Magnitude: 3.6ML(B), 3.3ML(P)

Felt at Mammoth Lakes (B).

18 August (B) Central California
Origin time: 08 43 49.8
Epicenter: 37.02 N., 121.73 W.
Depth: 11 km
Magnitude: 4.3mb(G), 4.5ML(B)

This event was felt over an area of approximately 9500 km^2 of the coastal region (fig. 10).

Intensity V: The most common effects at the places listed below were: Items knocked from shelves, small objects overturned and fell.
Cupertino (press report), Freedom, Gilroy (a man was thrown out of bed), Los Gatos, Morgan Hill (hanging pictures fell), New Almaden (small landslides), Palo Alto, Saratoga (press report).

Intensity IV: Alameda, Aptos, Aromas, Belmont, Ben Lomond, Berkeley (press report), Boulder Creek, Capitola, Carmel, Chualar, Corralitos (press report), Daly City, Davenport, East Santa Cruz, El Cerrito, Fairfax (press report), Felton, Fremont, Half Moon Bay, Hayward, Hollister, Holy City, La Honda, Millbrae, Moffett Field Naval Air Station, Monterey, Monte Sereno, Mount Hermon, Newark, Pescadero, Redwood Estates, San Carlos, San Francisco, San Jose (City, Cambrian Park, Saint James Park), San Juan Bautista, Santa Clara, Santa Cruz, Saratoga, Soquel, South San Francisco, Union City, Watsonville.

Intensity III: Carmel Valley, Castroville, Martinez (press report), Mountain View (telegraphic report), Richmond, Salinas, San Rafael (press report), San Mateo, Stinson Beach, Sunol, Sunnyvale (press report).

Intensity II: San Francisco International Airport.

Felt: Novato (press report), Pinole (press report), San Anselmo (press report), San Leandro (press report), Sausalito (press report), Seaside, Tres Pinos.

19 August (B) Central California
Origin time: 11 04 19.1
Epicenter: 37.69 N., 121.95 W.
Depth: 8 km
Magnitude: 2.9ML(B)

Intensity III: Livermore, Pleasanton, San Leandro (all press reports).

21 August (P) Southern California
Origin time: 10 20 42.4
Epicenter: 33.25 N., 116.42 W.
Depth: 2 km
Magnitude: 3.4ML(P)

Felt at Borrego Springs (P).

21 August (B) Central California
Origin time: 14 31 26.4
Epicenter: 37.68 N., 121.95 W.
Depth: 8 km
Magnitude: 3.3ML(B)

Felt along the east side of San Francisco Bay (press report). Also felt at Dublin (B) and Livermore (press report).

22 August (B) Mammoth Lakes area
Origin time: 04 25 17.3
Epicenter: 37.49 N., 118.87 W.
Depth: 5 km
Magnitude: 3.6ML(B), 3.2 ML(P)

Felt at Mammoth Lakes (B).

24 August (B) Mammoth Lakes area
Origin time: 07 27 35.4

Epicenter: 37.54 N., 118.85 W.
Depth: 2 km
Magnitude: 3.4ML(B), 3.1ML(P)

Felt at Mammoth Lakes (B).

24 August (B) Central California
Origin time: 22 33 36.8
Epicenter: 37.46 N., 121.82 W.
Depth: 6 km
Magnitude: 3.9ML(B)
Intensity V:
San Jose--few small objects were overturned or fell, some glassware was broken, few merchandise items were thrown from store shelves.
San Jose (Cambrian Park)--few windows were cracked, some glassware was broken, few small objects were overturned or fell.
Intensity IV: Boulder Creek, Calaveras Reservoir Dam (press report), Mount Hamilton, Mountain View (press report), San Rafael, Milpitas, Santa Clara, Sunnyvale (press report).
Intensity III: Agnew, Belmont, Campbell, Fremont (press report), Half Moon Bay, Mission, San Jose (Saint James Park).
Intensity II: Ben Lomond, Felton.

26 August (B) Mammoth Lakes area
Origin time: 19 39 08.4
Epicenter: 37.60 N., 118.82 W.
Depth: 6 km
Magnitude: 3.9ML(B), 3.6ML(P)

Felt at Mammoth Lakes (B). This is one of 60 small earthquakes in a swarm.

26 August (P) Southern California
Origin time: 22 28 03.1
Epicenter: 33.27 N., 115.99 W.
Depth: 4 km
Magnitude: 3.5ML(P)

Felt at Borrego Springs and Salton City (press report).

27 August (P) Southern California
Origin time: 04 25 37.6
Epicenter: 33.93 N., 117.82 W.
Depth: 17 km
Magnitude: 3.4ML(P)
Intensity V:
Anaheim--few dishes were broken, few small objects were overturned or fell, few windows were cracked.
Huntington Beach--hairline cracks in dry wall.
Intensity IV: Santa Ana.
Intensity III: El Toro Marine Corps Air Station, Perry, Whittier.
Intensity II: Glendora.

CALIFORNIA--Continued

28 August (B) Central California
Origin time: 01 03 11.3
Epicenter: 37.85 N., 121.76 W.
Depth: 12 km
Magnitude: 3.8ML(B)
Intensity V:
San Ramon--few merchandise items were thrown from store shelves, some glassware was broken, few small objects were overturned or fell.
Stockton--few windows were cracked, some glassware was broken, few small objects were overturned or fell, hanging pictures were swung out of place.
Intensity IV: Alamo, Lafayette (B).
Intensity III: Alameda, Boulder Creek, Brentwood (press report), Fremont, Hayward, Holt, Livermore (press report), Novato, Volcano.
Intensity II: Byron, Elk Grove.
Felt: Antioch (B), Dublin (B).

29 August (B) Owens Valley area
Origin time: 05 02 34.8
Epicenter: 37.37 N., 118.46 W.
Depth: 16 km
Magnitude: 3.7ML(B), 3.1ML(P)
Intensity IV: Bishop.

31 August (B) Central California
Origin time: 03 11 07.8
Epicenter: 36.64 N., 121.33 W.
Depth: 7 km
Magnitude: 4.0ML(B)

Felt at Hollister (B).

3 September (P) Southern California
Origin time: 11 11 06.1
Epicenter: 33.27 N., 116.41 N.
Depth: 4 km
Magnitude: 2.6ML(P)

Felt at Borrego Springs (P).

3 September (B) Northern California
Origin time: 18 58 24.4
Epicenter: 39.63 N., 122.52 W.
Depth: 9 km
Magnitude: 4.3mb(G), 4.0ML(B)
Intensity IV: Hamilton City (one report of a cracked foundation), Princeton.
Intensity III: Paskenta, Tehama.

5 September (P) Imperial Valley area
Origin time: 05 21 26.6
Epicenter: 32.93 N., 115.85 W.
Depth: 4 km
Magnitude: 3.7mb(G), 4.4ML(P)
Intensity IV: Calexico, Plaster City.
Intensity III: Agua Caliente Springs (Canebrake Canyon), Heber, Mount Laguna,

Ocotillo, Seeley.
Intensity II: Boulevard, Niland.
Felt: Brawley (P), El Centro (P).

8 September (B) Mammoth Lakes area
Origin time: 18 07 05.0
Epicenter: 37.47 N., 118.87 W.
Depth: 6 km
Magnitude: 3.5ML(B)

Felt at Mammoth Lakes (B).

8 September (B) Mammoth Lakes area
Origin time: 18 42 19.1
Epicenter: 37.50 N., 118.86 W.
Depth: 6 km
Magnitude: 3.8ML(B), 4.0ML(P)

Felt at Mammoth Lakes (B).

11 September (B) Central California
Origin time: 11 59 32.4
Epicenter: 37.41 N., 121.77 W.
Depth: 8 km
Magnitude: 3.1ML(B)

Felt in the San Jose area (B).

11 September (P) Southern California
Origin time: 13 55 31.6
Epicenter: 33.81 N., 118.23 W.
Depth: 4 km
Magnitude: 2.6ML(P)

Felt at Carson (P).

12 September (P) Southern California
Origin time: 15 55 53.6
Epicenter: 33.80 N., 118.20 W.
Depth: 6 km
Magnitude: 2.5ML(P)

Felt at Carson (P).

16 September (B) Northern California
Origin time: 10 26 05.9
Epicenter: 40.70 N., 124.06 W.
Depth: 17 km
Magnitude: 3.0ML(B)
Intensity III: Eureka (B), Fortuna (B), Rio Dell.
Felt: Shelter Cove.

17 September (P) Southern California
Origin time: 10 57 50.3
Epicenter: 33.94 N., 118.31 W.
Depth: 14 km
Magnitude: 3.3ML(P)

Felt at Burbank, Pasadena, Long Beach, and Los Angeles (P).

19 September (P) Central California
Origin time: 13 46 00.7
Epicenter: 35.77 N., 117.73 W.

CALIFORNIA--Continued

Depth: 5 km
Magnitude: 2.8ML(P)

Felt at Ridgecrest (P).

21 September (P) Southern California
Origin time: 18 17 12.4
Epicenter: 34.44 N., 119.79 W.
Depth: 9 km
Magnitude: 3.2ML(P)

Felt from Santa Barbara to San Luis Obispo (P).

Intensity IV: Isla Vista (University of California, Santa Barbara), Santa Barbara (press report).
Intensity III: Montecito.
Felt: San Luis Obispo (P).

23 September (B) Mammoth Lakes area
Origin time: 03 28 00.1
Epicenter: 37.46 N., 118.83 W.
Depth: 5 km
Magnitude: 4.0ML(B), 4.2ML(P)

Felt at Mammoth Lakes (B).

23 September (P) Southern California
Origin time: 20 42 50.9
Epicenter: 34.86 N., 120.32 W.
Depth: 3 km
Magnitude: 4.0ML(P), 3.5ML(B)
Intensity V: Orcutt (few items fell off shelves).
Intensity IV: Atascadero, Casmalia, Goleta, Guadalupe, Santa Maria, Vandenberg AFB.
Intensity III: Ventura.
Intensity II: Los Alamos
Felt: Casmalia (B), Oxnard (P), Summerland.

24 September (B) California-Nevada border region
Origin time: 07 40 24.6

See Nevada listing.

24 September (B) Central California
Origin time: 08 05 55.4
Epicenter: 36.66 N., 121.34 W.
Depth: 6 km
Magnitude: 3.7mb(G), 4.0ML(B)
Intensity IV: Paicines, San Juan Bautista.
Intensity III: Hollister (press report).
Felt: Tres Pinos.

25 September (B) Central California
Origin time: 21 31 17.4
Epicenter: 36.66 N., 121.34 W.
Depth: 6 km
Magnitude: 3.2ML(B)
Intensity II: Hollister.

28 September (B) Mammoth Lakes area
Origin time: 00 41 49.2
Epicenter: 37.49 N., 118.76 W.

Depth: 13 km
Magnitude: 4.3ML(B), 4.1ML(P)

Felt at Mammoth Lakes (B).

28 September (B) Mammoth Lakes area
Origin time: 03 32 19.8
Epicenter: 37.46 N., 118.87 W.
Depth: 5 km
Magnitude: 3.6ML(B), 3.7ML(P)

Felt at Mammoth Lakes (B).

28 September (B) Mammoth Lakes area
Origin time: 03 37 25.5
Epicenter: 37.47 N., 118.83 W.
Depth: 2 km
Magnitude: 3.7ML(B), 3.8ML(P)

Felt at Mammoth Lakes (B).

28 September (P) Central California
Origin time: 10 43 51.4
Epicenter: 35.75 N., 117.75 W.
Depth: 5 km
Magnitude: 3.5ML(P)

Felt at Ridgecrest (P).

29 September (P) Central California
Origin time: 18 19 16.1
Epicenter: 35.75 N., 117.75 W.
Depth: 6 km
Magnitude: 3.9ML(P)
Intensity IV: Ridgecrest.
Intensity III: Cantil, Mountain Mesa.

29 September (P) Central California
Origin time: 18 21 01.1
Epicenter: 35.75 N., 117.75 W.
Depth: 8 km
Magnitude: 4.2ML(P)
Intensity V:
Little Lake--few merchandise items were thrown from store shelves, few small objects were overturned or fell, moving vehicles rocked slightly.
Ridgecrest--a brick fence collapsed and a 15-foot tree split (press report).

30 September (P) Central California
Origin time: 22 38 10.6
Epicenter: 35.75 N., 117.75 W.
Depth: 8 km
Magnitude: 4.4mb(G), 4.1ML(P), 4.4ML(B)
Intensity V:
Inyokern--hairline cracks in plaster walls, hanging pictures out of place.
Intensity IV: Ridgecrest, Trona.
Intensity III: Onyx.

1 October (P) Central California
Origin time: 14 29 01.6
Epicenter: 35.74 N., 117.75 W.

CALIFORNIA--Continued

Depth: 8 km
Magnitude: 4.9mb(G), 5.4ML(B), 4.9ML(P)

This earthquake was felt over an area of approximately 29,000 km^2 of Inyo, Kern, Los Angeles, San Bernardino, and Tulare Counties (fig. 11).

The earthquake, the largest of five tremors in four days, was described as a "sharp jolt" by a Ridgecrest resident (press report).

At the China Lake Naval Weapons Center, a wall in a newly constructed building was cracked. There was no damage to the underground storage facilities where missiles and bombs are stored (press report).

Intensity VI:
Barstow--many large cracks in interior dry walls.
Inyokern--many large cracks in interior dry walls and plaster/stucco walls, few items were thrown from store shelves, few small objects fell, hanging objects or doors were swung moderately, hanging pictures were swung, buildings shook strongly, felt by all, awakened and frightened several.
Little Lake--few items were thrown from store shelves, many small objects were overturned and fell, hanging pictures fell, water sloshed in swimming pools, felt by all, awakened many and frightened all.
Ridgecrest--hairline cracks in interior plaster/stucco walls, felt by many, awakened and frightened few. Much merchandise was dumped from store shelves. One resident reported bricks in his fireplace had shifted (press report).

Intensity V:
Caliente--few cracked windows, few small objects were overturned and fell, few glassware or dishes were broken, hanging pictures were swung, felt by many, awakened and frightened few.
Cantil--hairline cracks in interior plaster/stucco walls, few small objects were overturned and fell, hanging pictures were swung out of place, building shook strongly, felt by several, awakened and frightened few.
Johannesburg--few items were thrown from store shelves, few small objects were overturned and fell, few glassware or dishes were broken, hanging pictures were swung out of place, felt by many, awakened few.
Trona--hairline cracks in interior plaster/stucco walls, water sloshed in

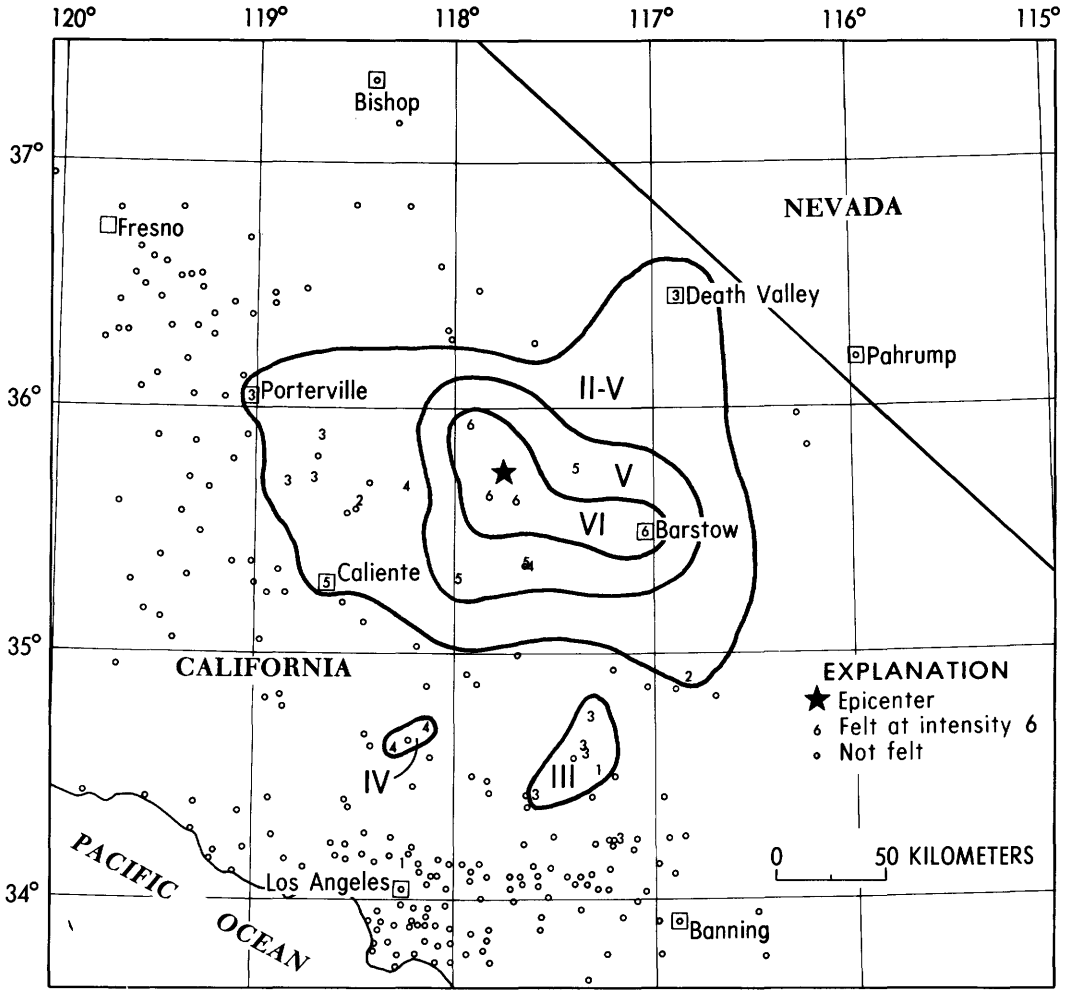

Figure 11. Isoseismal map for the southern California earthquake of 1 October 1982, 14 29 01.6 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals are used to represent these intensities at specific sites.

CALIFORNIA--Continued

swimming pools, light furniture or small appliances were overturned, few small objects overturned and fell, hanging pictures were swung out of place, hanging objects or doors were swung moderately, felt by all.

Intensity IV: Lancaster, Leona Valley, Onyx, Red Mountain.

Intensity III: California Hot Springs (Pine Flat area), Death Valley, George Air Force Base, Glennville, Helendale, Oro Grande, Phelan, Pioneer Point, Porterville, Skyforest, Woody.

Intensity II: Mountain Mesa, Yermo.

Felt: Glendale, Goldstone Tracking Station, and Victorville (P).

2 October (B) Mammoth Lakes area
Origin time: 11 52 15.6
Epicenter: 37.47 N., 118.83 W.
Depth: 5 km
Magnitude: 3.7ML(B), 3.2ML(P)

Felt at Mammoth Lakes (B).

14 October (P) Southern California
Origin time: 00 51 32.3
Epicenter: 34.20 N., 118.65 W.
Depth: 2 km
Magnitude: 2.2ML(P)

Felt at Canoga Park (P).

14 October (B) Mammoth Lakes area
Origin time: 16 11 31.5
Epicenter: 37.48 N., 118.84 W.

Depth: 8 km
Magnitude: 3.8ML(P), 3.9ML(B)

Felt at Mammoth Lakes (B).

14 October (B) Mammoth Lakes area
Origin time: 19 34 50.5
Epicenter: 37.49 N., 118.82 W.
Depth: 14 km
Magnitude: 3.9ML(B), 3.9ML(P)

Felt at Mammoth Lakes (B).

15 October (P) Southern California
Origin time: 09 57 20.5
Epicenter: 34.20 N., 118.65 W.
Depth: 4 km
Magnitude: 3.3ML(P)
Intensity V:
Simi Valley--few items were thrown from store shelves, few small objects were overturned and fell, felt by and awakened many, frightened several.
Intensity IV: Canoga Park, Chatsworth, Northridge, Pacoima.
Felt: Malibu, Reseda, Van Nuys, Westwood (press report).

16 October (B) Mammoth Lakes area
Origin time: 12 54 13.9
Epicenter: 37.45 N., 118.84 W.
Depth: 7 km
Magnitude: 3.9ML(B), 4.0ML(P)
Intensity IV: Bishop.
Felt: Mammoth Lakes (B).

19 October (P) Central California
Origin time: 00 49 42.2
Epicenter: 35.52 N., 119.11 W.
Depth: 6 km
Magnitude: 3.6ML(P)

Felt at Bakersfield (P).

19 October (B) Central California
Origin time: 22 04 00.8
Epicenter: 37.03 N., 121.74 W.
Depth: 11 km
Magnitude: 3.7ML(B)

This earthquake was felt throughout the San Francisco Bay area from Marin City to Monterey (B).

Intensity IV: Aromas, Morgan Hill.
Intensity III: Aptos, Castroville, Freedom, Santa Clara, Watsonville.
Felt: Gilroy and San Martin (B).

24 October (P) Southern California
Origin time: 19 23 19.0
Epicenter: 34.08 N., 119.22 W.
Depth: 14 km
Magnitude: 3.8ML(P), 3.8ML(B)

CALIFORNIA--Continued

Intensity V:
Saticoy--few windows were cracked, few small objects were overturned and fell, few glassware or dishes were broken, hanging pictures were swung, felt by many, awakened and frightened few.
Ventura--few windows were cracked, felt by many, frightened several.
Intensity IV: Oxnard.
Felt: Point Mugu (P).

25 October (B) Central California
Origin time: 22 26 04.3
Epicenter: 36.33 N., 120.50 W.
Depth: 11 km
Magnitude: 5.3mb(G), 5.2MS(G), 5.4ML(B), 5.6ML(P)

This earthquake was felt over an area of approximately 92,800 km^2 of central California (fig. 12). The earthquake was felt in at least 14 counties--from Kern County on the south to Santa Clara County on the north and from coastal San Luis Obispo County to Mono County on the eastern slope of the Sierra Nevada (press report).

At Coalinga, Lt. McDaniel of the state Highway Patrol said: "when the trembling started, we got out of the building.... telephone poles and wires were swaying." He also reported several stores were closed due to fallen merchandise blocking the aisles (press report).

A radio announcer for KOLI in Coalinga described the earth motion as follows: "like a big jackhammer--up and down" (press report).

A hunter, 25 miles northwest of Coalinga in the coastal mountain range (between San Lucas and Priest City), gave the following account of the earthquake: "I was sitting on a steep hillside when the rock I was sitting on began moving. I immediately jumped up. I was nearly thrown off balance. I remember reaching down to hold onto the rock to keep from falling. The trees around me shook hard enough to knock the rainwater off their leaves. As suddenly as it began, it stopped, lasting no longer than 5-7 seconds. I don't remember feeling any aftershocks. The next day I noticed several areas where the ground had been cracked and lifted as much as five inches. All over, even on the hilltops, small cracks could be seen in the wet ground."

Intensity VI:
Avenal--small amounts of plaster fell from ceiling, some cracks in interior plaster walls, few items were thrown from store

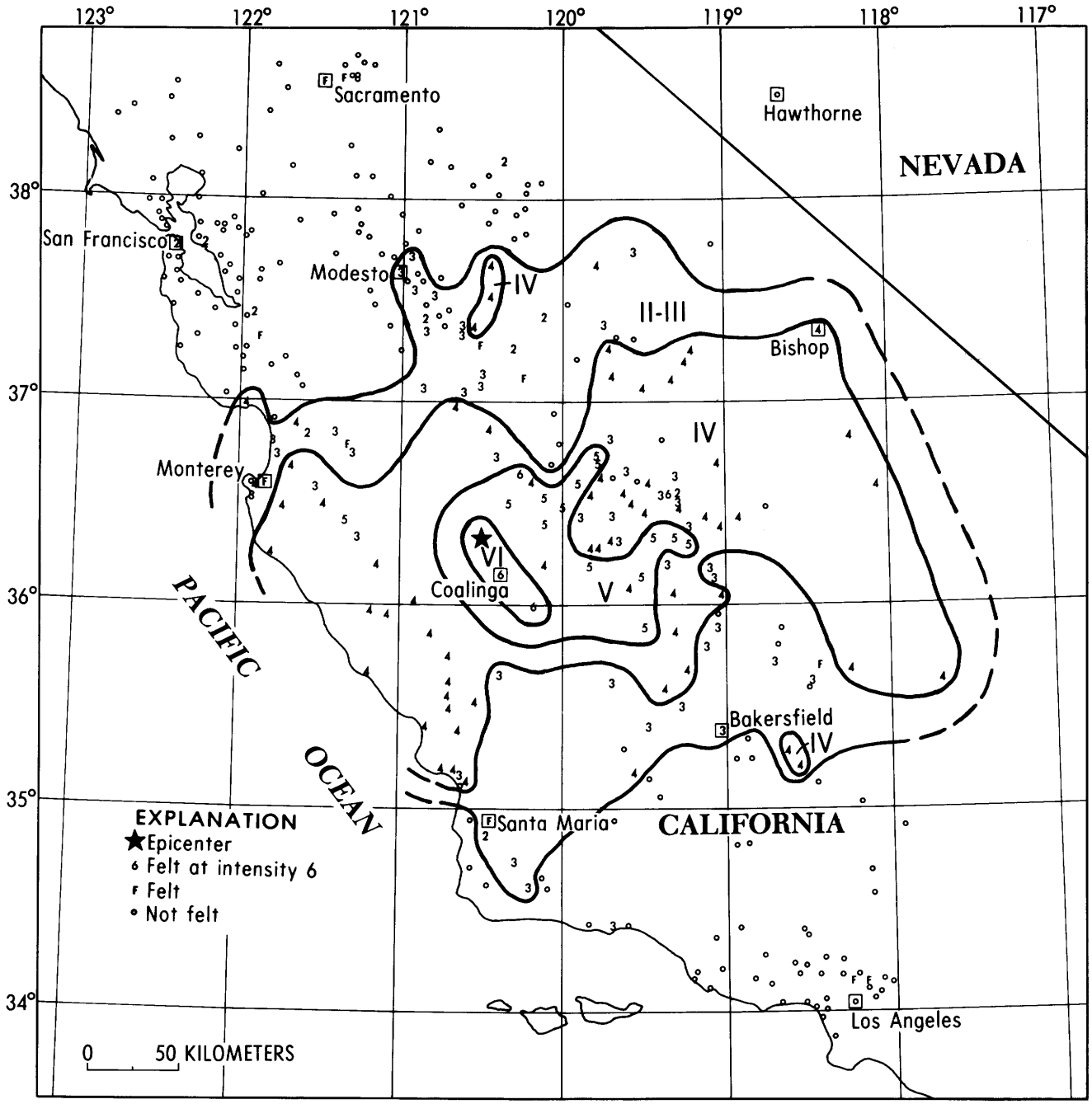

Figure 12. Isoseismal map for the central California earthquake of 25 October 1982, 22 26 04.3 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals are used to represent these intensities at specific sites. A dashed line is an inferred isoseismal.

shelves, building shook strongly, a stationary 5-ton truck rocked slightly, felt by all, frightened few.

Coalinga--tiles fell from interior walls, many items were thrown from store shelves, hanging pictures were swung out of place, building shook strongly, observer experienced difficulty in standing or walking, hanging objects or doors were swung moderately, few small objects overturned and fell, felt by and frightened all.

Sultana--foundation was cracked, felt by many, frightened few.

Tranquillity--hairline cracks in plaster/stucco walls, building shook strongly, felt by many, frightened few.

Intensity V:

Alpaugh--hairline cracks in plaster/stucco and dry walls, hanging pictures were swung, building shook strongly, felt by and frightened all.

Burrel--hairline cracks in interior dry wall and plaster/stucco walls, moving vehicles were rocked slightly, few items were thrown from store shelves, hanging pictures were swung out of place, few small objects were overturned and fell, few glassware or dishes were broken, light furniture or appliances were overturned, felt by many, frightened few.

Calwa--hairline cracks in plaster/stucco and drywall, felt by many.

Cantua Creek--moving vehicles were rocked moderately, few small objects were overturned, building shook strongly, observer experienced difficulty in standing or walking, felt by and frightened many.

Farmersville--moving vehicles were rocked slightly, few items were thrown from store shelves, few small objects were overturned, felt by many.

Five Points--hairline cracks in plaster or stucco interior walls, few windows were cracked, hanging objects or doors were swung moderately, hanging pictures were swung, felt by all, frightened few.

Fresno--hairline cracks in interior plaster/stucco and dry walls, few windows were cracked, few items were thrown from store shelves, few small objects were overturned and fell, few glassware or dishes were broken, hanging pictures were swung, felt by many, frightened several, awakened few.

Goshen--few windows were cracked, felt by and frightened several.

Helm--many small objects were overturned and fell, pictures were swung, felt by and frightened many.

Raisin--hanging objects or doors were swung moderately, observer experienced difficulty in standing or walking, felt by and frightened several.

CALIFORNIA--Continued

Soledad--few small objects were overturned and fell, few glassware or dishes were broken, felt by and frightened several.

Stratford--few small objects were overturned and fell, hanging pictures were swung, hanging objects or doors were swung moderately, building shook strongly, felt by and frightened many.

Visalia--water splashed onto sides of swimming pools, lakes or ponds; building shook strongly; few small objects were overturned and fell; hanging pictures were swung; felt by many; frightened several.

Waukena--hairline cracks in interior dry walls; water splashed onto sides of swimming pools, lakes or ponds; few windows were cracked; few small objects were overturned and fell; few glassware or dishes were broken; hanging objects or doors were swung; felt by many; frightened few.

Intensity IV: Armona (hanging pictures were swung out of place), Aromas, Arroyo Grande, Atascadero, Auberry (hanging pictures were swung out of place), Avila Beach, Big Creek, Big Sur, Bishop (hanging pictures were swung), Bradley, Caliente, Capitola, Carmel Valley, Caruthers, Castle AFB, Coarsegold, Corcoran, Creston (hanging pictures were swung), Dos Palos, Earlimart, Easton (hanging pictures were swung), El Portal (hanging pictures were swung), Fellows, Firebaugh, Fort Hunter Leggett, Gonzales, Huron, Independence, Keene, King City, Kingsburg, La Grange (hanging pictures were swung), Lakeshore, Lemoncove, Lemoore (hanging pictures were swung), Lemoore--Naval Air Station (telephone service interrupted), Lockwood (hanging pictures were swung), Lone Pine (hanging pictures were swung), McFarland, Miramonte, Monterey (hanging pictures were swung), Morro Bay, O'Neals, Onyx, Paso Robles, Porterville (hanging pictures were swung), Prather, Reedley, Ridgecrest (hairline cracks in interior plaster/stucco walls, hanging picures were swung), Salinas, San Ardo (hanging pictures were swung), San Joaquin, San Luis Obispo (press report), San Miguel (hanging pictures were swung out of place), San Simeon, Santa Margarita (hanging pictures were swung), Selma, Shaver Lake, Snelling (shelves in a mobil home with ceramics were pulled away from wall causing few glassware/dishes to be broken), Templeton (hanging pictures were swung), Three Rivers, Tipton (hanging pictures were swung), Traver, Yettem, Wasco, Woodlake.

Intensity III: Ahwanee, Atwater, Bakersfield (hanging pictures were swung), Buellton, Buttonwillow, Carmel, Castroville, Chualar, Clovis, Cutler, Del Rey, Denair, Dinuba, Ducor (hanging pictures were

swung), El Nido, Glennville, Greenfield, Hanford, Hollister, Ivanhoe, Jolon, Keyes, Lake Isabella (hanging pictures were swung), Laton, Lindsay, Los Alamos (hanging pictures were swung), Los Banos, Lost Hills, Mendota, Modesto, Moss Landing, Orange Cove, Paicines, Pismo Beach (hanging pictures were swung), Red Top, Richgrove, Riverbank, Riverdale, Santa Rita Park (hanging pictures were swung), Shafter, Shandon, Soquel, Stevinson, Strathmore, Tulare, Ventura, Winton, Yosemite National Park.
Intensity II: Alameda, Avery, Catheys Valley, Hilmar, Milpitas, Orcutt, Orosi, Planada, San Francisco, San Juan Bautista.
Felt: Atwater, Chowchilla, Glendale (P), Merced, Monterey (P), Pasadena (P), Sacramento (P), San Jose (P), Santa Maria (P), Seaside, Tres Pinos, Wofford Heights.

25 October (B) Central California
Origin time: 23 12 18.0
Epicenter: 36.32 N., 120.51 W.
Depth: 12 km
Magnitude: 4.3mb(G), 4.3ML(P), 4.2ML(B)

Felt in the Coalinga-Hanford area (B).

25 October (B) Central California
Origin time: 23 15 54.5
Epicenter: 36.34 N., 120.50 W.
Depth: 11 km
Magnitude: 4.0ML(P), 4.0ML(B)

Felt in the Coalinga-Hanford area (B).

27 October (P) Southern California
Origin time: 10 21 41.7
Epicenter: 33.89 N., 118.22 W.
Depth: 15 km
Magnitude: 2.9ML(P)

This earthquake was felt in portions of southern Los Angeles County (press report), including Gardena (P) and Huntington Park.

28 October (P) Southern California
Origin time: 09 40 36.3
Epicenter: 33.83 N., 117.09 W.
Depth: 17 km
Magnitude: 2.9ML(P)

Felt at Riverside (P).

4 November (B) Northern California
Origin time: 15 10 41.3
Epicenter: 38.44 N., 122.27 W.
Depth: 14 km
Magnitude: 3.2ML(B)

Felt at Napa and Yountville (B).

CALIFORNIA--Continued

4 November (P) Southern California
Origin time: 16 13 40.7
Epicenter: 33.88 N., 117.91 W.
Depth: 6 km
Magnitude: 2.8ML(P)

Felt at Anaheim, Buena Park, and Fullerton (P).

9 November (B) Northern California
Origin time: 11 12 05.8
Epicenter: 39.74 N., 120.60 W.
Depth: 10 km
Magnitude: 3.0ML(B)
Intensity IV: Blairsden, Portola.

10 November (B) Northern California
Origin time: 04 17 26.9
Epicenter: 38.83 N., 122.77 W.
Depth: 2 km
Magnitude: 2.9ML(B)

Felt in the epicentral area (B).

10 November (P) Southern California
Origin time: 11 21 25.7
Epicenter: 34.06 N., 116.67 W.
Depth: 8 km
Magnitude: 4.1mb(G), 4.4ML(B), 3.6ML(P)
Intensity V:
Big Bear Lake--few windows were cracked, hanging pictures were swung out of place, few small objects were overturned and fell, few glassware or dishes were broken.
Desert Hot Springs--few items were thrown from store shelves, few small objects were overturned, felt by many, awakened and frightened several.
Idyllwild--few small objects fell; felt by, awakened, and frightened several.
White Water--hanging pictures fell; few small objects were overturned and fell; building shook slightly to strongly; hanging objects or doors were swung moderately; felt by, awakened, and frightened many.
Intensity IV: Cabazon, Forest Falls, Mecca, Marongo Valley.
Intensity III: Banning, Indio, Landers, North Palm Springs, Thousand Palms.

10 November (B) Mammoth Lakes area
Origin Time: 13 29 57.4
Epicenter: 37.48 N., 118.82 W.
Depth: 5 km
Magnitude: 3.6ML(B), 3.4ML(P)

Felt at Mammoth Lakes.

12 November (P) Imperial Valley
Origin time: 09 33 55.2
Epicenter: 32.98 N., 115.56 W.

Depth: 14 km
Magnitude: 2.6ML(P)

Felt in the Imperial Valley (P).

12 November (B) Central California
Origin time: 21 57 11.9
Epicenter: 35.33 N., 120.54 W.
Depth: 9 km
Magnitude: 3.4ML(P), 3.0ML(B)

Felt at San Luis Obispo (B).

13 November (B) Central California
Origin time: 20 18 20.5
Epicenter: 36.69 N., 121.20 W.
Depth: 9 km
Magnitude: 3.7ML(B)
Intensity III: Prunedale, Salinas.
Felt: Hollister (B)

26 November (B) Northern California
Origin time: 09 29 49.1
Epicenter: 38.28 N., 122.16 W.
Depth: 11 km
Magnitude: 3.3ML(B)
Intensity IV: Napa.
Felt: Fairfield (B), Martinez (press report).

26 November (P) Southern California
Origin time: 12 30 16.5
Epicenter: 34.84 N., 118.96 W.
Depth: 11 km
Magnitude: 2.8ML(P)
Intensity IV: Frazier Park.
Intensity III: Lebec.
Intensity II: Ontario.

28 November (B) Mammoth Lakes area
Origin Time: 14 43 19.1
Epicenter: 37.47 N., 118.85 W.
Depth: 3 km
Magnitude: 3.5ML(B), 2.8ML(P)

Felt at Mammoth Lakes.

2 December (B) Northern California
Origin Time: 16 02 45.9
Epicenter: 39.17 N., 122.21 W.
Depth: 10 km
Magnitude: 3.0ML(B)

Felt in the Lake Berryessa and Clear Lake areas (B).

4 December (P) Southern California
Origin time: 03 08 17.9
Epicenter: 33.95 N., 118.31 W.
Depth: 10 km
Magnitude: 2.3ML(P)
Intensity III: Inglewood (press report).

7 December (B) Central California
Origin time: 23 05 39.1

CALIFORNIA--Continued

Epicenter: 36.92 N., 121.70 W.
Depth: 10 km
Magnitude: 3.1ML(B)

Felt at Watsonville (B).

12 December (B) Mammoth Lakes area
Origin time: 10 38 06.0
Epicenter: 37.54 N., 118.82 W.
Depth: 6 km
Magnitude: 3.6ML(P), 3.6ML(B)

Felt at Mammoth Lakes (B).

12 December (B) Mammoth Lakes area
Origin time: 20 59 08.8
Epicenter: 37.53 N., 118.81 W.
Depth: 4 km
Magnitude: 3.8ML(P), 3.7ML(B)

Felt at Mammoth Lakes (B).

14 December (B) Central California
Origin time: 06 46 09.9
Epicenter: 36.91 N., 121.49 W.
Depth: 5 km
Magnitude: 3.2ML(B)

Felt at Hollister (B).

14 December (B) Northern California
Origin Time: 19 15 31.8
Epicenter: 40.54 N., 124.20 W.
Depth: 20 km
Magnitude: 3.6ML(B)

Felt at Ferndale (B).

16 December (B) Northern California
Origin time: 06 53 01.3
Epicenter: 40.50 N., 124.26 W.
Depth: 18 km
Magnitude: 4.8mb(G), 4.5MS(G), 4.4ML(B)

This earthquake was felt over an area of approximately 8,200 km^2 of northern California (fig. 13).

The Fortuna sheriff dispatcher gave the following account of the earthquake: "It wasn't one of the nice, gentle rollers. It was like a big bang. It shook for about 45 seconds. Then there was another, like an aftershock, for about 20 seconds, a rumbling" (press report).

Residents in Ferndale reported windows were shattered, chimneys cracked, and pictures were knocked off the walls in the restored section of Victorian homes and businesses.

In Fortuna, stores had broken windows and grocery stores had cans knocked from shelves (press report).

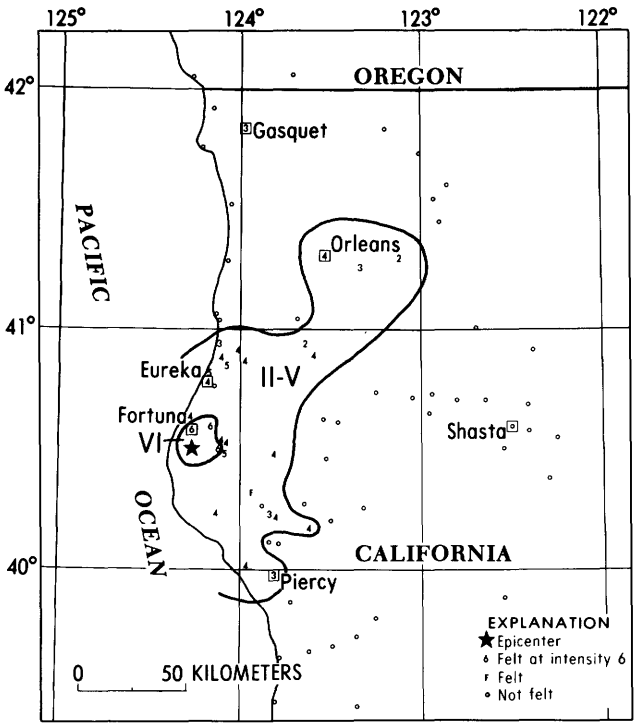

Figure 13. Isoseismal map for the northern California earthquake of 16 December 1982, 06 53 01.3 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals are used to represent these intensities at specific sites.

CALIFORNIA--Continued

Intensity VI:
Ferndale--chimneys were cracked, windows were shattered, pictures were knocked from walls (press report).
Fortuna--chimneys were cracked, plate glass windows were broken or shattered, much merchandise was knocked from store shelves (press report).
Rio Dell--few items were thrown from store shelves, hanging pictures were swung out of place with some fallen, some windows were broken; few small objects were overturned, fell, and were broken, light furniture or small appliances were overturned, few glassware or dishes were broken, hanging objects or doors were swung moderately; it was felt by all.
Intensity V:
Bayside--moving vehicles were rocked slightly, few small objects were overturned and fell, few glassware or dishes were broken.
Samoa--few items were thrown from store shelves, few small objects were overturned and fell.
Scotia--few small objects were overturned and fell, hanging doors or objects were swung moderately.
Intensity IV: Alderpoint, Arcata, Blue Lake, Bridgeville, Carlotta, Eureka, Honeydew, Hydesville, Korbel, Loleta, Orleans, Phillipsville, Salyer, Whitethorn.
Intensity III: Forks of Salmon, Gasquet, McKinleyville, Miranda, Piercy, Swains Flat.
Intensity II: Sawyers Bar, Willow Creek.
Felt: Weott.

20 December (B) Northern California
Origin Time: 00 08 21.1
Epicenter: 40.54 N., 123.97 W.
Depth: 5 km
Magnitude: 3.3ML(B)

Felt in the Eureka area (B).

21 December Northern California
Origin time: 09 33
Epicenter: Not located
Depth: None computed
Magnitude: 2.7ML(B)
Intensity III: Clearlake Highlands (press report).

21 December (B) Mammoth Lakes area
Origin time: 22 28 12.9
Epicenter: 37.64 N., 118.96 W.
Depth: 5 km
Magnitude: 3.7ML(P), 3.3ML(B)

Felt at Mammoth Lakes (B).

22 December (B) Owens Valley area
Origin time: 09 40 49.9
Epicenter: 37.36 N., 118.52 W.
Depth: 10 km
Magnitude: 3.4ML(P), 3.4ML(B)

Felt in the Bishop area (B).

22 December (P) Central California
Origin time: 14 47 36.9
Epicenter: 35.75 N., 117.75 W.
Depth: 10 km
Magnitude: 3.8ML(B), 3.3ML(P)

Felt at Ridgecrest (P).

26 December (B) Northern California
Origin time: 09 59 46.6
Epicenter: 38.81 N., 122.78 W.
Depth: 1 km
Magnitude: 3.1ML(B)
Intensity IV: Cobb (press report).

26 December (B) Central California
Origin time: 10 04 24.9
Epicenter: 36.81 N., 121.55 W.

Depth: 6 km
Magnitude: 3.5ML(B)

Felt at Hollister and San Juan Bautista (B).

28 December (B) Mammoth Lakes area
Origin time: 00 49 38.8
Epicenter: 37.49 N., 118.80 W.
Depth: 3 km
Magnitude: 3.8ML(P), 3.6ML(B)

Felt at Mammoth Lakes (B).

28 December (B) California-Nevada border region
Origin time: 19 06 24.8

See Nevada listing.

30 December (P) Southern California
Origin time: 04 00 29.5
Epicenter: 33.96 N., 118.82 W.
Depth: 0 km
Magnitude: 3.6ML(P), 4.0mb(G)
Intensity III: Malibu (press report).

31 December (P) Central California
Origin time: 09 07 23.3
Epicenter: 35.81 N., 117.74 W.
Depth: 6 km
Magnitude: 4.4mb(G), 4.5ML(B), 4.0ML(P)
Intensity IV: Trona.

CALIFORNIA--OFF THE COAST

8 January (B) Northern California
Origin time: 20 41 16.5
Epicenter: 40.28 N., 124.44 W.
Depth: 25 km
Magnitude: 3.8ML(B)
Intensity III: Rio Dell
Felt: Ferndale and Portola (B).

13 January (G) Northern California
Origin time: 12 26 21.0
Epicenter: 40.37 N., 125.76 W.
Depth: 8 km
Magnitude: 4.9mb(G), 5.1MS(G), 4.8ML(B)

Felt in the coastal areas of Humboldt County (B).

Intensity V: Eureka.

6 February (B) Northern California
Origin time: 12 02 03.6
Epicenter: 41.00 N., 125.01 W.
Depth: 4 km
Magnitude: 5.1mb(G), 5.1MS(G), 5.2ML(B)

Felt in the coastal areas of Humboldt and Del Norte Counties (B).

Intensity IV: Crescent City, Eureka, Ferndale, Westhaven (2 miles south of Trinidad).
Intensity III: Miranda, Rio Dell.

24 February (B) Northern California
Origin time: 05 22 42.6
Epicenter: 40.86 N., 124.90 W.
Depth: 15 km
Magnitude: 4.4mb(G), 4.4ML(B)

Felt in the coastal areas of Humboldt County (B).

Intensity IV: Eureka.
Felt: McKinleyville (B).

5 April (P) Southern California
Origin time: 01 14 54.5
Epicenter: 33.52 N., 118.94 W.
Depth: 19 km
Magnitude: 3.7ML(P)
Intensity III: Marina del Rey.
Felt: Santa Monica (P).

29 April (P) Southern California
Origin time: 15 33 45.0
Epicenter: 33.51 N., 118.95 W.
Depth: 19 km
Magnitude: 3.9ML(P)

Generally felt in the Santa Monica Bay area (press report).

Intensity III: Carpinteria, Pasadena, Trabuco Canyon.
Felt: Brentwood (P), western part of the Los Angeles area (press report).

25 May (P) Southern California
Origin time: 13 44 30.3
Epicenter: 33.54 N., 118.21 W.
Depth: 14 km
Magnitude: 4.7mb(G), 4.2ML(B), 4.1ML(P)

This earthquake was felt in parts of Los Angeles, Orange, and San Diego Counties (press report).

Intensity IV: Compton, Costa Mesa, Lakewood, Long Beach, Midway City, Palos Verdes Peninsula, San Pedro, Seal Beach, Surfside, Torrance.
Intensity III: Artesia, Avalon, Carson, Cypress, La Mirada, Lawndale, Hermosa Beach, Huntington Beach, Paramount, South Gate, Sunset Beach, Redondo Beach, Westminster, Wilmington.
Felt: Anaheim, Burbank (press report), San Clemente (press report).

4 December (B) Northern California
Origin time: 03 08 23.2
Epicenter: 40.30 N., 124.52 W.

CALIFORNIA--Off the coast--Continued

Depth: 24 km
Magnitude: 3.1ML(B)

Felt at Honeydew and Petrolia (B).

COLORADO

11 March (G) Denver area
Origin time: 23 55 28.8
Epicenter: 39.86 N., 104.85 W.
Depth: 5 km
Magnitude: 2.8ML(G), 2.8MN(T)
Intensity III: Thornton, Western Hills (Adams County).
Felt: Commerce City and Northglenn (telephone report).

18 September (G) Denver area
Origin time: 16 11 44.9
Epicenter: 39.90 N., 104.91 W.
Depth: 5 km
Magnitude: 2.8ML(G), 2.8Mn(T)
Intensity III: Northglenn, Thornton (press report).
Intensity II: Western Hills (Adams County).

22 November (G) Northwestern Colorado
Origin time: 10 09 01.4
Epicenter: 39.74 N., 107.58 W.
Depth: 5 km
Magnitude: 2.9ML(G)

Felt at the Rifle Fish Hatchery about 15 miles northeast of Rifle (telephone report).

CONNECTICUT

9 January (G) New Brunswick, Canada
Origin time: 12 53 51.9

See Maine listing.

11 January (G) New Brunswick, Canada
Origin time: 21 41 08.0

See Maine listing.

19 January (J) Central New Hampshire
Origin time: 00 14 42.7

See New Hampshire listing.

17 June (J) Southern Connecticut
Origin time: 08 02 38.4
Epicenter: 41.51 N., 72.47 W.
Depth: 8 km
Magnitude: 2.2Mn(J), 2.1Mn(L)

Felt at Moodus (J).

CONNECTICUT--Continued

17 June (J) Southern Connecticut
Origin time: 14 14 20.1
Epicenter: 41.53 N., 72.46 W.
Depth: 5 km
Magnitude: 2.7MD(J)

Felt at Moodus (J).

17 June (J) Southern Connecticut
Origin time: 14 14 36.0
Epicenter: 41.55 N., 72.45 W.
Depth: 4 km
Magnitude: 2.3Mn(J), 2.9MD(J)
Intensity IV: Amston, Cobalt, Higganum, Moodus.
Intensity III: Colchester, East Hampton.
Felt: Glastonbury (J), Hebron (J).

17 June (J) Southern Connecticut
Origin time: 15 29 23.9
Epicenter: 41.46 N., 72.46 W.
Depth: 14 km
Magnitude: 2.1MD(J)

Felt at Moodus (J).

GEORGIA

24 September (K) Eastern Tennessee
Origin time: 21 57 42.5

See Tennessee listing.

24 September (K) Eastern Tennessee
Origin time: 22 19 16.9

See Tennessee listing.

31 October (F) Western Georgia
Origin time: 03 07 36.7
Epicenter: 32.67 N., 84.87 W.
Depth: 0 km
Magnitude: 2.9Mn(G), 2.9MD(K), 3.0Mn(F)

This earthquake was felt in Harris and Muscogee Counties in Georgia and Russell County, Alabama. Many of the citizens described the earthquake sound as an explosion, plane crash, or a train derailment (press report).

Intensity V:
Georgia--
Columbus (Beallwood)--few small objects fell, felt by many, awakened several, frightened few.
Elberslie--few small objects were overturned and fell, small amounts of plaster/stucco fell from interior walls, felt by many, awakened and frightened several.
Midland--few small objects were overturned and fell, few glassware or

dishes were broken, felt by many, awakened and frightened several.

Intensity IV:
Alabama--Phenix City.
Georgia--Buena Vista, Cataula, Columbus (Windsor Park), Upatoi.

Intensity III:
Alabama--Smiths.
Georgia--Columbus (Baker Village, Lindsay Creek, Wynnton), Columbus Metropolitan Airport, Hamilton.

31 October (F) Western Georgia
Origin time: 03 12 12.2
Epicenter: 32.64 N., 84.89 W.
Depth: 0 km
Magnitude: 3.1Mn(G), 3.1ML(F), 3.0MD(K)

Felt in Harris and Muscogee Counties in Georgia and in the Phenix City, Alabama area (press report).

21 December (F) Central Georgia
Origin time: 05 30 46.2
Epicenter: 32.80 N., 83.52 W.
Depth: 0 km
Magnitude: 2.7MD(F)

This is one of a swarm of 100 earthquakes recorded in this area from 5 December 1982 to 1 March 1983. An aftershock study by Georgia Insitute of Technology using portable seismographs determined an approximate hypocenter at 32.72° N., 83.46 W., depth of 33 km.

Intensity III: Macon.

HAWAII

9 January (H) Island of Hawaii
Origin time: 14 32 07.3
Epicenter: 19.17 N., 155.54 W.
Depth: 34 km
Magnitude: 3.1ML(H)
Intensity II: Pahala.

15 January (H) Island of Hawaii
Origin time: 10 07 52.6
Epicenter: 20.08 N., 155.84 W.
Depth: 28 km
Magnitude: 3.6ML(H)
Intensity IV: Kohala.
Intensity III: Ahualoa.
Intensity II: Volcano.

15 January (H) Island of Hawaii
Origin time: 11 04 42.1
Epicenter: 19.31 W., 155.23 W.
Depth: 10 km
Magnitude: 3.7ML(H)
Intensity III: Hilo, Papaikou.

21 January (H) Island of Hawaii
Origin time: 21 52 41.2
Epicenter: 19.23 N., 155.59 W.
Depth: 10 km
Magnitude: 5.4mb(G), 4.9MS(G), 5.4MS(B), 5.4ML(H)

This event caused two small landslides onto a road in Laupahoehoe Gulch and widespread minor damage in the Kau area; many items were knocked from shelves and in some cases, shelves were broken. Several rock walls were also knocked down (press report). Most descriptions of the effects from this earthquake were combined with the aftershock at 22 29 13.9 UTC; these data are listed below. The shaking from the second event was described as not being as strong as the first one.

Intensity VI:
Hawaii Island--
Hawaiian Ocean View Estates.
Naalehu.
Pahala--light furniture was overturned, many small objects were overturned and fell, many dishes were broken, many items were thrown from store shelves, trees and bushes were strongly shaken, chimneys were cracked, fallen rock walls, felt by all.

Intensity V:
The most common effects at the places listed below were that few small objects overturned and fell, few glassware were broken, few items were thrown from store shelves; it was felt by all.
Hawaii Island--Hawi, Hilo, Honaunau, Honomu, Naalehu, Ninole, Ookala, Pepeekeo, Pohakuloa Army Training Area, Volcano.

Intensity IV:
Hawaii Island--Captain Cook, Hakalau, Holualoa, Keaau, Honokaa, Kapaau, Kealakekua, Laupahoehoe, Mountain View, Paauhau, Paauilo, Pahoa, Papaaloa, Papaikou.
Maui Island--Haiku, Kaunakakai.
Oahu Island--Honolulu, Laie.

Intensity III:
Hawaii Island--Kohala District.
Maui Island--Kahului, Kihei, Kualapuu, Wailuku.

Intensity II: Kauai, Maui, and Oahu Islands.

21 January (H) Island of Hawaii
Origin time: 22 29 13.9
Epicenter: 19.22 N., 155.55 W.
Depth: 14 km
Magnitude: 5.6mb(G), 4.8MS(G), 5.4MS(B) 5.4ML(H)

This earthquake caused one personal injury from a falling rock in Kaawali Gulch. It

was not as strongly felt as the previous event (press reports). Most of the effects are combined with the description of the event at 21 52 41.2 UTC and could not be separated. Both earthquakes were felt on the islands of Hawaii, Maui, and Oahu and caused intensity VI effects in the southern area of Hawaii.

21 January (H) Island of Hawaii
Origin time: 22 42 05.9
Epicenter: 19.17 N., 155.53 W.
Depth: 8 km
Magnitude: 3.0ML(H)
Intensity III: Pahala.
Intensity II: Hawaiian Ocean View Estates.

21 January (H) Island of Hawaii
Origin time: 22 45 12.7
Epicenter: 19.19 N., 155.56 W.
Depth: 7 km
Magnitude: 3.0ML(H)
Intensity II: Pahala.

21 January (H) Island of Hawaii
Origin time: 22 48 09.6
Epicenter: 19.23 N., 155.54 W.
Depth: 12 km
Magnitude: 3.4ML(H)
Intensity III: Hawaiian Ocean View Estates, Pahala.
Intensity II: Naalehu.

21 January (H) Island of Hawaii
Origin time: 22 51 56.4
Epicenter: 19.16 N., 155.53 W.
Depth: 12 km
Magnitude: 3.0ML(H)
Intensity II: Pahala.

21 January (H) Island of Hawaii
Origin time: 23 01 09.7
Epicenter: 19.20 N., 155.54 W.
Depth: 10 km
Magnitude: 4.1ML(H)
Intensity IV: Pahala.
Intensity III: Hawaiian Ocean View Estates, Naalehu, Volcano.
Intensity II: Hilo.

21 January (H) Island of Hawaii
Origin time: 23 35 10.9
Epicenter: 19.18 N., 155.52 W.
Depth: 6 km
Magnitude: 3.1ML(H)
Intensity III: Hawaiian Ocean View Estates, Pahala.
Intensity II: Naalehu.

21 January (H) Island of Hawaii
Origin time: 23 37 17.4
Epicenter: 19.23 N., 155.55 W.
Depth: 12 km
Magnitude: 4.2ML(H)
Intensity V: Pahala

Intensity III: Hawaiian Ocean View Estates, Naalehu, Volcano.
Intensity II: Hilo.

22 January (H) Island of Hawaii
Origin time: 01 19 41.0
Epicenter: 19.22 N., 155.53 W.
Depth: 8 km
Magnitude: 3.1ML(H)
Intensity III: Hawaiian Ocean View Estates, Pahala.

22 January (H) Island of Hawaii
Origin time: 01 35 12.5
Epicenter: 19.20 N., 155.52 W.
Depth: 9 km
Magnitude: 3.2ML(H)
Intensity III: Pahala.
Intensity II: Hawaiian Ocean View Estates.

22 January (H) Island of Hawaii
Origin time: 02 23 36.0
Epicenter: 19.17 N., 155.53 W.
Depth: 12 km
Magnitude: 3.1ML(H)
Intensity III: Pahala.
Intensity II: Hawaiian Ocean View Estates.

22 January (H) Island of Hawaii
Origin time: 12 25 05.2
Epicenter: 19.20 N., 155.60 W.
Depth: 10 km
Magnitude: 3.6ML(H)
Intensity III: Pahala.

23 January (H) Island of Hawaii
Origin time: 03 45 08.1
Epicenter: 19.23 N., 155.57 W.
Depth: 10 km
Magnitude: 4.3ML(H)
Intensity IV: Pahala.
Intensity III: Hawaiian Ocean View Estates, Naalehu, Volcano.

26 January (H) Island of Hawaii
Origin time: 03 03 51.1
Epicenter: 19.20 N., 155.59 W.
Depth: 9 km
Magnitude: 3.4ML(H)
Intensity III: Pahala.

30 January (H) Island of Hawaii
Origin time: 03 13 25.9
Epicenter: 19.92 N., 155.60 W.
Depth: 13 km
Magnitude: 3.6ML(H)
Intensity IV: Pohakuloa Training Area.
Intensity III: Kukuihaele, Waikii.

30 January (H) Island of Hawaii
Origin time: 03 16 49.4
Epicenter: 19.92 N., 155.60 W.
Depth: 11 km
Magnitude: 3.0ML(H)
Intensity II: Kukuihaele, Waikii.

2 February (H) Island of Hawaii
Origin time: 14 58 14.3
Epicenter: 19.18 N., 155.59 W.
Depth: 8 km
Magnitude: 3.0ML(H)
Intensity III: Hilea, Pahala.

2 February (H) Island of Hawaii
Origin time: 16 29 49.9
Epicenter: 19.22 N., 155.58 W.
Depth: 11 km
Magnitude: 4.3ML(H)
Intensity IV: Hilea, Pahala.
Intensity III: Hawaiian Ocean View Estates, Naalehu, Captain Cook.
Intensity II: Mountain View.

9 February (H) Island of Hawaii
Origin time: 15 42 22.9
Epicenter: 19.33 N., 155.12 W.
Depth: 9 km
Magnitude: 3.8ML(H)
Intensity III: Hawaii Volcanoes National Park, Hilo, Volcano.
Intenstiy II: Ahualoa

13 February (H) Island of Hawaii
Origin time: 02 06 30.9
Epicenter: 19.36 N., 155.05 W
Depth: 9 km
Magnitude: 3.4ML(H)
Intensity II: Hilo.

16 February (H) Island of Hawaii
Origin time: 03 36 28.2
Epicenter: 19.36 N., 155.33 W
Depth: 32 km
Magnitude: 4.2ML(H)
Intensity IV: Ahualoa.
Intensity III: Kamuela, Mountain View, Hawaiian Ocean View Estates, Kona.
Intensity II: Glenwood.

7 March (H) Island of Hawaii
Origin time: 22 31 36.1
Epicenter: 19.37 N., 155.05 W.
Depth: 9 km
Magnitude: 3.2ML(H)
Intensity II: Hilo.

16 March (H) Island of Hawaii
Origin time: 07 41 35.6
Epicenter: 19.32 N., 155.22 W.
Depth: 11 km
Magnitude: 3.5ML(H)
Intensity III: Hilo.

20 March (H) Island of Hawaii
Origin time: 23 10 22.3
Epicenter: 19.34 N., 155.28 W.
Depth: 36 km
Magnitude: 3.9ML(H)
Intensity III: Hawaii Volcanoes National Park, Pahala, Waimea.

HAWAII--Continued

26 March (H) Island of Hawaii
Origin time: 11 04 34.0
Epicenter: 19.92 N., 155.60 W.
Depth: 11 km
Magnitude: 3.6ML(H)
Intensity IV: Ahualda.
Intensity III: Ookala, Kamuela.

6 April (H) Island of Hawaii
Origin time: 20 58 59.9
Epicenter: 19.35 N., 155.10 W.
Depth: 9 km
Magnitude: 3.0ML(H)
Intensity III: Hilo.

10 April (H) Island of Hawaii
Origin time: 15 59 49.6
Epicenter: 19.39 N., 155.28 W.
Depth: 3 km
Magnitude: 3.1ML(H)
Itennsity III: Hawaii Volcanoes National Park.

12 April (H) Island of Hawaii
Origin time: 02 04 02.4
Epicenter: 19.33 N., 155.12 W.
Depth: 9 km
Magnitude: 4.6mb(G), 4.2ML(H)
Intensity V: Hawaiian Beaches, Paradise Park.
Intensity IV: Hilo, Glenwood, Mountain View.
Intensity III: Volcano, Hawaii Volcanoes National Park.
Intensity II: Ahualoa, Waimea.

16 April (H) Island of Hawaii
Origin time: 15 00 23.2
Epicenter: 20.03 N., 155.34 W.
Depth: 7 km
Magnitude: 3.6ML(H)
Intensity III: Ahualoa, Waimea.

17 April (H) Island of Hawaii
Origin time: 01 15 40.7
Epicenter: 19.33 N., 155.20 W.
Depth: 10 km
Magnitude: 3.7ML(H)
Intensity III: Hilo, Volcano.

17 April (H) Island of Hawaii
Origin time: 11 20 50.7
Epicenter: 19.42 N., 155.28 W.
Depth: 1 km
Magnitude: 3.9ML(H)
Intensity V: Hawaii Volcanoes National Park.
Intensity IV: Volcano.

19 April (H) Island of Hawaii
Origin time: 12 23 55.9
Epicenter: 19.35 N., 155.08 W.
Depth: 9 km
Magnitude: 3.8ML(H)
Intensity IV: Glenwood.
Intensity III: Hilo.

19 April (H) Island of Hawaii
Origin time: 13 02 00.7
Epicenter: 19.34 N., 155.07 W.
Depth: 9 km
Magnitude: 3.9ML(H)
Intensity IV: Glenwood.
Intensity III: Hilo.

28 April (H) Island of Hawaii
Origin time: 06 23 01.4
Epicenter:
19.34 N., 155.06 W.
Depth: 9 km

Magnitude: 3.4ML(H)
Intensity III: Mountain View.
Intensity II: Volcano.

30 April (H) Island of Hawaii
Origin time: 18 48 52.7
Epicenter: 19.36 N., 155.08 W.
Depth: 9 km
Magnitude: 3.4ML(H)
Intensity II: Hilo.

1 May Island of Oahu
Origin time: 17 20
Epicenter: Not located.
Depth: None computed.
Magnitude: None computed.
Intensity IV: Wheeler AFB.
Intensity II: Hickman AFB.

4 May (H) Island of Hawaii
Origin time: 17 29 42.6
Epicenter: 19.32 N., 155.22 W.
Depth: 10 km
Magnitude: 3.6ML(H)
Intensity III: Mountain View, Volcano.
Intensity II: Hilo, Wood Valley.

10 May (H) Island of Hawaii
Origin time: 20 47 27.2
Epicenter: 19.18 N., 155.60 W.
Depth: 10 km
Magnitude: 3.9ML(H)
Intensity IV: Kau area.
Intensity III: Kona.

14 May (H) Island of Hawaii
Origin time: 16 26 31.7
Epicenter: 20.00 N., 155.87 W.
Depth: 20 km
Magnitude: 4.5mb(G), 4.8ML(H)

This earthquake was felt throughout the Island of Hawaii and on parts of Maui.

Intensity V: Kamuela, Kawaihae, Kohala.
Intensity IV: Hilo, Honokaa, Kailua-Kona, North Kona, Hale Pohaku-Maunakea.
Intensity III: Honaunau-Kona, Pahala, Puna, South Kona, Volcano.

HAWAII--Continued

15 May (H) Island of Hawaii
Origin time: 15 09 46.2
Epicenter: 19.29 N., 155.23 W.
Depth: 11 km
Magnitude: 3.1ML(H)
Intensity III: Hilo.

19 May (H) Island of Hawaii
Origin time: 03 36 19.8
Epicenter: 19.95 N., 156.43 W.
Depth: 1 km
Magnitude: 4.8mb(G), 3.7MS(G), 4.8ML(H)
Intensity V: North Kona.
Intensity IV: Ahualoa, Kamuela.
Intensity III: Hilo, Honokaa, South Kona, Volcano.
Intensity II: Island of Maui.

6 June (H) Island of Hawaii
Origin time: 18 39 30.9
Epicenter: 20.15 N., 155.78 W.
Depth: 27 km
Magnitude: 3.0ML(H)
Intensity II: Waimea.

10 June (H) Island of Hawaii
Origin time: 12 16 55.7
Epicenter: 19.34 N., 155.22 W.
Depth: 10 km
Magnitude: 3.1ML(H)
Intensity II: Volcano.

21 June (H) Island of Hawaii
Origin time: 16 04 14.8
Epicenter: 19.36 N., 155.25 W.
Depth: 10 km
Magnitude: 3.4ML(H)
Intensity III: Hilo, Volcano.

6 July (H) Island of Hawaii
Origin time: 07 19 02.4
Epicenter: 19.29 N., 155.38 W.
Depth: 6 km
Magnitude: 3.2ML(H)
Intensity III: Pahala.

18 July (H) Island of Hawaii
Origin time: 13 30 11.1
Epicenter: 19.12 N, 155.52 W.
Depth: 13 km
Magnitude: 3.0ML(H)
Intensity III: Discovery Harbor, Pahala.

8 August (H) Island of Hawaii
Origin time: 00 02 26.8
Epicenter: 19.33 N., 155.19 W.
Depth: 10 km
Magnitude: 3.4ML(H)
Intensity III: Hilo

10 August (H) Island of Hawaii
Origin time: 11 21 54.1
Epicenter: 19.30 N., 155.22 W.
Depth: 10 km

Magnitude: 3.6ML(H)
Intensity III: Glenwood, Hilo.

10 August (H) Island of Hawaii
Origin time: 11 37 51.4
Epicenter: 19.31 N., 155.22 W.
Depth: 8 km
Magnitude: 3.4ML(H)
Intensity III: Hilo.

12 August (H) Island of Hawaii
Origin time: 10 43 35.8
Epicenter: 19.42 N., 155.27 W.
Depth: 16 km
Magnitude: 4.0ML(H)
Intensity IV: Glenwood, Hilo, Pahala.

12 August (H) Island of Hawaii
Origin time: 12 44 04.5
Epicenter: 19.42 N., 155.27 W.
Depth: 16 km
Magnitude: 3.3ML(H)
Intensity III: Hilo.

20 August (H) Island of Hawaii
Origin time: 08 51 20.5
Epicenter: 19.75 N., 156.03 W
Depth: 8 km
Magnitude: 3.6ML(H)
Intensity IV: Kona.

20 August (H) Island of Hawaii
Origin time: 08 59 59.1
Epicenter: 19.75 N., 156.01 W
Depth: 8 km
Magnitude: 3.0ML(H)
Intensity III: Kona.

27 August (H) Island of Hawaii
Origin time: 11 48 30.7
Epicenter: 20.20 N., 155.64 W.
Depth: 10 km
Magnitude: 3.8ML(H)
Intensity IV: Kohala.

11 September (H) Island of Hawaii
Origin time: 05 03 44.7
Epicenter: 19.39 N., 155.42 W.
Depth: 11 km
Magnitude: 3.4ML(H)
Intensity III: Glenwood.
Felt: Ka'u area (press report), Volcano (press report).

12 September (H) Island of Hawaii
Origin time: 16 18 34.6
Epicenter: 19.36 N., 155.00 W.
Depth: 9 km
Magnitude: 3.1ML(H)
Intensity III: Kalapana.
Felt: Hilo (press report), Puna area (press report).

HAWAII--Continued

14 September (H) Island of Hawaii
Origin time: 19 17 32.6
Epicenter: 19.18 N., 155.60 W.
Depth: 10 km
Magnitude: 3.6ML(H)
Intensity IV: Pahala.
Intensity III: Hawaiian Ocean View Estates.

22 September (H) Island of Hawaii
Origin time: 01 35 27.8
Epicenter: 19.33 N., 155.12 W.
Depth: 9 km
Magnitude: 3.7ML(H)
Intensity IV: Hilo.

24 September (H) Island of Hawaii
Origin time: 00 23 37.5
Epicenter: 19.38 N., 155.40 W.
Depth: 11 km
Magnitude: 3.2ML(H)
Intensity III: Pahala.

26 September (H) Island of Hawaii
Origin time: 03 02 15.1
Epicenter: 19.39 N., 155.28 W.
Depth: 6 km
Magnitude: 3.3ML(H)
Intensity III: Volcano.

26 September (H) Island of Hawaii
Origin time: 04 38 47.3
Epicenter: 19.40 N., 155.26 W.
Depth: 1 km
Magnitude: 3.3ML(H)
Intensity III: Volcano.

29 September (H) Island of Hawaii
Origin time: 16 20 52.1
Epicenter: 19.37 N., 155.18 W.
Depth: 32 km
Magnitude: 3.4ML(H)
Intensity III: Glenwood, Hilo, Volcano.

11 October (H) Island of Hawaii
Origin time: 18 59 53.5
Epicenter: 19.38 N., 155.25 W.
Depth: 3 km
Magnitude: 3.1ML(H)
Intensity III: Hawaiian Volcano Observatory.

22 October (H) Island of Hawaii
Origin time: 13 13 29.0
Epicenter: 19.33 N., 155.19 W.
Depth: 10 km
Magnitude: 3.3ML(H)
Intensity II: Hilo, Mauna Kea Observatory.

23 October (H) Island of Hawaii
Origin time: 07 42 56.4
Epicenter: 19.35 N., 155.22 W.
Depth: 9 km
Magnitude: 3.0ML(H)
Intensity II: Volcano.

HAWAII--Continued

25 October (H) Island of Hawaii
Origin time: 16 19 30.6
Epicenter: 19.33 N., 155.19 W.
Depth: 10 km
Magnitude: 3.2ML(H)
Intensity III: Hilo, Volcano.

1 November (H) Island of Hawaii
Origin time: 02 24 45.7
Epicenter: 19.33 N., 155.12 W.
Depth: 8 km
Magnitude: 3.0ML(H)
Intensity II: Puu Oo.

13 November (H) Island of Hawaii
Origin time: 02 18 58.2
Epicenter: 19.45 N., 155.44 W.
Depth: 15 km
Magnitude: 4.1ML(H), 4.4mb(G)
Intensity V: Pahala.
Intensity IV: Hilo, Kurtistown, Volcano.
Intensity III: Kamuela, Kealakekua, Paauilo.

13 November (H) Island of Hawaii
Origin time: 02 28 29.0
Epicenter: 19.46 N., 155.43 W.
Depth: 15 km
Magnitude: 3.3ML(H)
Intensity III: Pahala.

25 November (H) Island of Hawaii
Origin time: 19 10 37.3
Epicenter: 19.36 N., 155.30 W.
Depth: 35 km
Magnitude: 3.6ML(H)
Intensity III: Hilo, Pahala.

28 November (H) Island of Hawaii
Origin time: 02 01 25.5
Epicenter: 19.28 N., 155.51 W.
Depth: 9 km
Magnitude: 3.8ML(H)
Intensity IV: Pahala.

30 November (H) Island of Hawaii
Origin time: 00 50 38.0
Epicenter: 19.35 N., 155.40 W.
Depth: 32 km
Magnitude: 4.0ML(H)
Intensity IV: Glenwood, Hilo, Kalapana, Mountain View, Pahala, Volcano.
Intensity III: Hawaiian Ocean View Estates, Papaikou, Pepeekeo.

5 December (H) Island of Hawaii
Origin time: 15 37 37.7
Epicenter: 19.81 N., 156.16 W.
Depth: 39 km
Magnitude: 3.8ML(H)
Intensity III: Waikaloa.

10 December (H) Island of Hawaii
Origin time: 05 38 11.7
Epicenter: 19.40 N., 155.29 W.
Depth: 3 km

HAWAII--Continued

Magnitude: 3.1ML(H)
Intensity IV: Hawaii Volcanoes National Park.
Intensity III: Volcano.

10 December (H) Island of Hawaii
Origin time: 06 00 51.6
Epicenter: 19.39 N., 155.24 W.
Depth: 4 km
Magnitude: 3.1ML(H)
Intensity IV: Hawaii Volcanoes National Park.
Intensity III: Volcano.

28 December (H) Island of Hawaii
Origin time: 09 35 01.9
Epicenter: 19.34 N., 155.10 W.
Depth: 9 km
Magnitude: 3.2ML(H)
Intensity II: Hilo.

31 December (H) Island of Hawaii
Origin time: 13 55 10.0
Epicenter: 19.38 N., 155.24 W.
Depth: 1 km
Magnitude: 3.4ML(H)
Intensity II: Volcano.

IDAHO

28 January (G) Southeastern Idaho
Origin time: 08 00 40.5
Epicenter: 42.42 N., 111.52 W.
Depth: 5 km
Magnitude: 3.2ML(G), 3.2ML(U)
Intensity III: Georgetown.

1 March (G) Southwestern Wyoming
Origin time: 10 43 06.2

See Wyoming listing.

8 June (G) Western Idaho
Origin time: 22 47 46.4
Epicenter: 44.59 N., 115.15 W.
Depth: 5 km
Magnitude: 3.7MD(D), 3.7ML(G)
Intensity III: Lowman.

10 August (G) Central Idaho
Origin time: 19 35 46.2
Epicenter: 44.62 N., 114.40 W
Depth: 5 km
Magnitude: 4.1ML(G), 3.5ML(D)
Intensity III: Lemhi.

30 September (G) Southeastern Idaho
Origin time: 02 27 19.8
Epicenter: 42.64 N., 111.46 W.
Depth: 5 km
Magnitude: 3.5ML(G)
Intensity III: Etna, Wyoming.

7 October (G) Southeastern Idaho
Origin time: 09 26 02.6

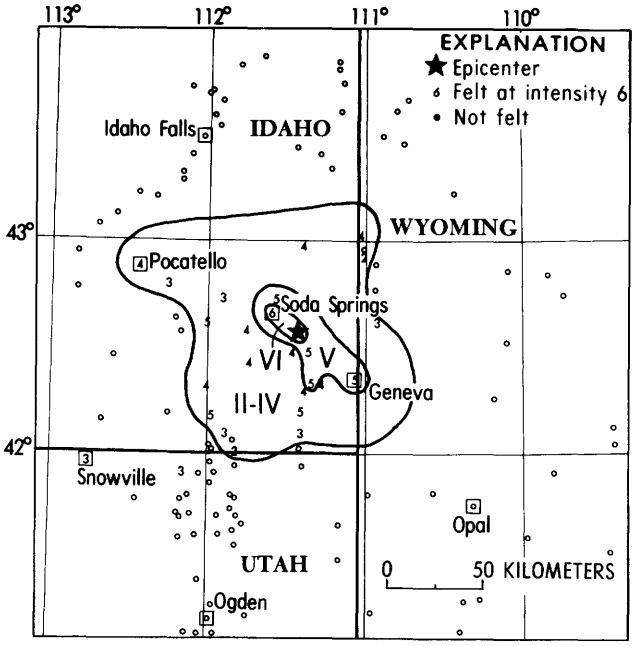

Figure 14. Isoseismal map for the southeastern Idaho earthquake of 14 October 1982, 04 10 24.3 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals are used to represent these intensities at specific sites.

IDAHO--Continued

Epicenter: 43.00 N., 111.07 W.
Depth: 5 km
Magnitude: 3.0ML(G), 3.5MD(D)
Intensity IV:
Wyoming--Freedom.
Intensity II:
Wyoming--Thayne.

8 October (U) Southeastern Idaho
Origin time: 09 53 32.1
Epicenter: 42.62 N., 111.47 W.
Depth: 7 km
Magnitude: 3.5ML(U)
Intensity IV:
Idaho--Dingle, Geneva, Georgetown, Soda Springs.
Intensity III:
Idaho--Bancroft, Bloomington.
Wyoming--Etna, Freedom.

8 October (U) Southeastern Idaho
Origin time: 10 06 59.0
Epicenter: 42.62 N., 111.47 W.
Depth: 7 km
Magnitude: 3.8ML(U), 4.0ML(D)
Intensity V:
Conda--few items were thrown from store shelves, few small objects were overturned and fell, building shook strongly, hanging pictures were swung, felt by many.

IDAHO--Continued

Soda Springs--few homes reported enlarged wall cracks.

8 October (U) Southeastern Idaho
Origin time: 16 04 09.0
Epicenter: 42.63 N., 111.49 W.
Depth: 7 km
Magnitude: 3.2ML(U)

Felt at Soda Springs (press report).

14 October (U) Southeastern Idaho
Origin time: 04 10 24.3
Epicenter: 42.59 N., 111.43 W
Depth: 7 km
Magnitude: 4.6mb(G), 4.7ML(U), 4.9ML(D)

This earthquake was felt over an area of approximately 13,500 km^2 of Idaho, Utah, and Wyoming (fig. 14). The earthquake was heard but not felt at Idaho Falls where the noise was described as sounding like a "sonic boom."

Intensity VI:
Idaho--
Soda Springs--hairline cracks in interior dry walls, a crack in basement walls was enlarged, foundation was cracked, buildings shook slightly to strongly, hanging pictures were swung, hanging objects or doors were swung moderately, felt by many, awakened few, frightened several.
Soda Springs (4 miles southeast)--bricks fell from chimneys and a few buildings were reported damaged.
Intensity V:
Idaho--
Bloomington--a stack of wood fell, few small objects fell, building shook slightly to strongly, felt by several.
Clifton--hairline cracks in interior dry wall, felt by few, frightened few.
Conda--few items were thrown from store shelves, few small objects fell, felt by many, awakened few.
Geneva--few small objects were overturned and fell, hanging pictures were swung, felt by many, awakened several.
Georgetown--few items were thrown from store shelves; water sloshed in swimming pools, lakes, or ponds; few small objects overturned; hanging pictures were swung out of place; hanging objects or doors were swung moderately; buildings shook slightly to strongly; felt by all; awakened and frightened many.
Lava Hot Springs--few windows were cracked, few small objects were overturned and fell, few glassware or dishes were broken, hanging pictures were swung; it was felt by many.
Montpelier--few small objects were over-

IDAHO--Continued

turned and fell, hanging pictures were swung, felt by many, awakened few, frightened several.

Intensity IV:
Idaho--Dingle (pictures were swung out of place), Grace, Nounan (pictures were swung out of place), Ovid, Paris, Pocatello (few items were thrown from store shelves), Swan Lake, Thatcher, Wayan.
Wyoming--Etna (few small objects were overturned).

Intensity III:
Idaho--Bancroft, Inkom (building shook strongly), Preston, Saint Charles.
Utah--Plymouth, Snowville.
Wyoming--Smoot (water beds jiggled).

Intensity II:
Idaho--Franklin.
Wyoming--Thayne.

24 December (G) Southeastern Idaho
Origin time: 15 11 20.1
Epicenter: 42.12 N., 112.56 W.
Depth: 5 km
Magnitude: 3.3ML(U)

Intensity III:
Idaho--Holbrook, Malad City, Stone.
Utah--Snowville.

ILLINOIS

11 August (S) Southern Illinois
Origin time: 10 32 38.8
Epicenter: 37.25 N., 88.73 W.
Depth: 5 km
Magnitude: 3.0Mn(G), 2.9MD(K), 2.7Mn(S)
Intensity III: Metropolis.

IOWA

11 July (G) Eastern South Dakota
Origin time: 19 42 28.4

See South Dakota listing.

15 November (G) Southeastern South Dakota
Origin time: 02 58 22.9

See South Dakota listing.

KANSAS

3 September (C) Central Kansas
Origin time: 10 55 20.5
Epicenter: 38.79 N., 98.89 W.
Depth: 11 km
Magnitude: 2.5MD(C)
Intensity IV: Russell.

KENTUCKY

7 April (I) Northeastern Kentucky
Origin time: 05 44 59.2
Epicenter: 38.50 N., 83.60 W.
Depth: None computed
Magnitude: 1.6Mn(I)

Felt by a few persons in an area between Flemmingsburg and Maysville (I).

MAINE

9 January (G) New Brunswick, Canada
Origin time: 12 53 51.9
Epicenter: 46.98 N., 66.66 W
Depth: 10 km
Magnitude: 5.7mb(G), 5.2MS(G), 5.8Mn(V), 5.8Mn(O)

This earthquake was felt in Canada from the Gaspe Peninsula in the north to Prince Edward Island in the east, and west to Montreal. In the United States it was felt in the States of Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. It was felt over an area of approximately 161,000 km^2 of the United States (fig. 15). More than 800 aftershocks of magnitude $\geq$ 1.0 were recorded through 30 June 1982 (Wetmiller and others, 1984).

Intensity VI: The most common damage at the places listed below were cracked chimneys or foundations.
Maine--
Ashland--hairline cracks in plaster and drywall, it was felt by and awakened many.
Bridgewater--cracked streets, many awakened.
Caribou--cracks in streets and sidewalks, stone fences cracked, hairline cracks in plaster walls, few merchandise items were thrown from store shelves, light furniture was overturned, some windows were broken out, many were awakened.
Easton--one resident reported a 6-foot crack in a bedroom wall (press report). Few merchandise items were thrown from store shelves, some windows were broken out, it was felt by and awakened all.
Fort Kent--few glassware were broken, it was felt by all.
Haynesville--large cracks in streets, it was felt by all. One large farmhouse was moved two inches, which cracked floor stringers, broke water pipes and sustained considerable damage.
Lille--large cracks in streets, it was felt by all.
Loring AFB (northwest of Limestone)--

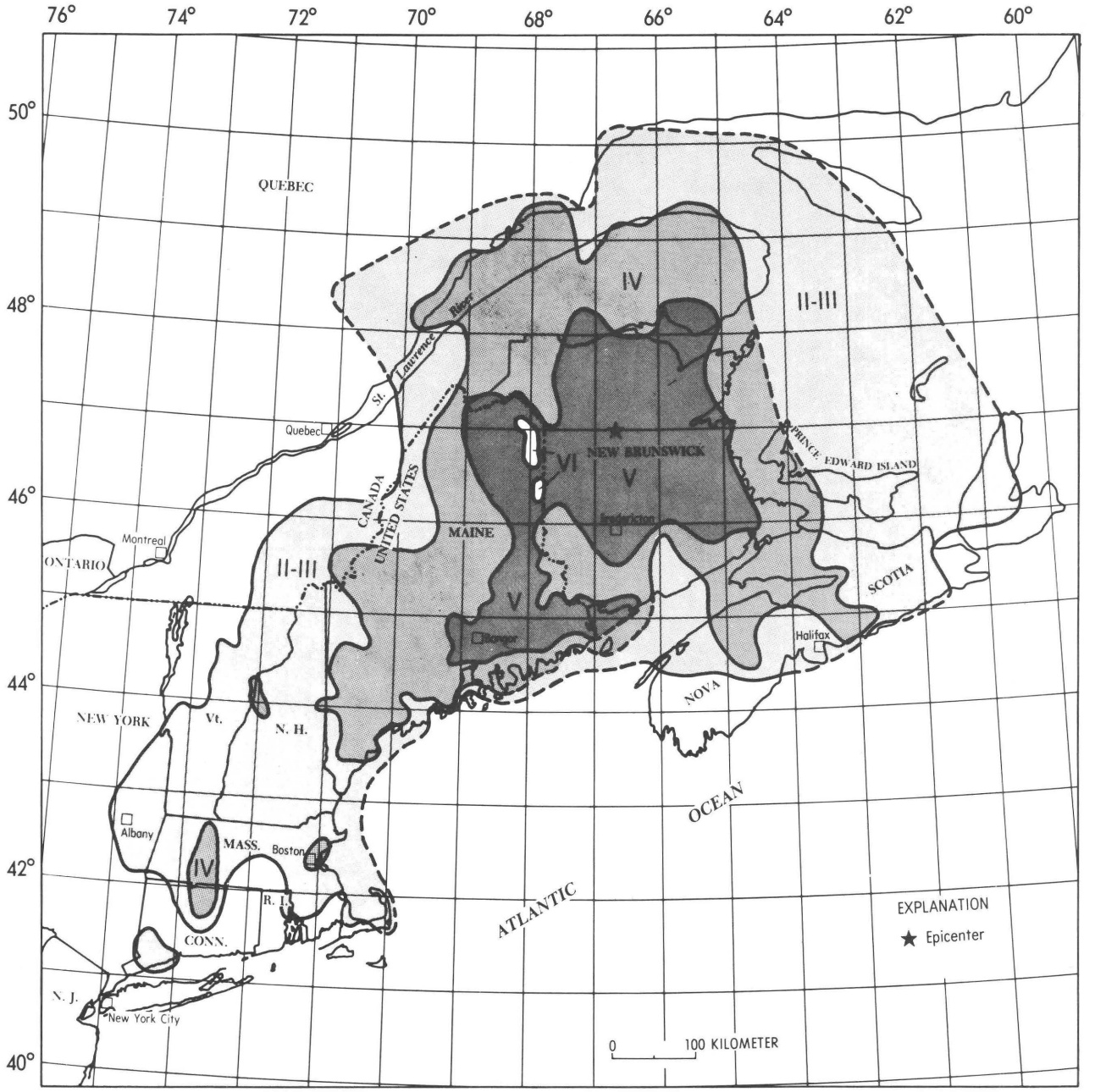

Figure 15. Isoseismal map of the northeastern United States and eastern Canada for the New Brunswick, Canada earthquake of 9 January 1982, 12 53 51.9 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals. Isoseismals in Canada are based on data from Drysdale and others (1982).

Control tower walls cracked and conduits pulled loose from wall. Damage to two hospital rooms in the form of cracked walls and floor, room closed permanently.
Lubec--tombstones were displaced, hairline cracks in plaster and dry wall, few merchandise items were thrown from store shelves, few windows were cracked, few glassware were broken, felt by and awakened many.
Monticello--hairline cracks in plaster and dry wall, few windows were cracked, it was felt by all.
Oakfield--few large cracks in plaster walls, few windows were cracked, hanging pictures fell, it was felt by many.
Presque Isle--large cracks in streets and sidewalks, cracked stone walls, large cracks in plaster walls, few merchandise items were thrown from store shelves, light and heavy furniture was overturned, few windows were cracked. A donut shop sustained a cracked floor and back wall.
Stockholm--underground pipes out of service, it was felt by all.
Woodland--hairline cracks in dry wall, it was felt by many.

Intensity V: The most common effects at the places listed below were that few small objects were overturned and fell, few glassware were broken, few windows were cracked, several or many were awakened , it was felt by many.

Maine--
Anson.
Benedicta.
Bradley.
Brooks.
Brownville Junction--few merchandise items were thrown from store shelves, a report of cracked streets.
Burlington.
Calais.
Cardville--few merchandise items were thrown from store shelves.
Carmel.
Cooper.
Danforth--few merchandise items were thrown from store shelves, hairline cracks in dry wall.
Dedham.
Denmark.
Dennysville--hairline cracks in dry wall.
Dixfield--few merchandise items were thrown from store shelves.
East Machias.
East Orland.
East Sebago--a report of cracked chimneys.
Etna--hairline cracks in interior walls,

a report of a cracked foundation.
Exeter.
Frankfort.
Fryeburg--light furniture was overturned.
Hollis Center--hairline cracks in plaster walls.
Houlton--hairline cracks in plaster walls.
Hudson--few merchandise items were thrown from store shelves.
Kenduskeag.
Limestone--few merchandise items were thrown from store shelves.
Lincoln.
Milbridge--hairline cracks in plaster walls.
Milford.
Monson--hairline cracks in plaster walls.
Newagen.
Northeast Harbor--hairline cracks in plaster walls.
Olamon.
Orono.
Orrington.
Oxbow.
Perry.
Phillips--hairline cracks in dry wall.
Poland Spring.
Princeton--light furniture was overturned.
Quimby.
Robbinston--hairline cracks in interior walls.
Saco--light furniture overturned, hairline cracks in interior walls, water splashed onto sides of lakes.
Saint David--few merchandise items were thrown from store shelves.
Saint Francis.
Scarborough--hairline cracks in dry wall.
Sheridan.
Sorrento.
Stetson--ground cracks in wet ground.
Topsfield--few merchandise items were thrown from stove shelves.
Upper Frenchville.
Van Buren--hairline cracks in plaster walls.
Washburn.
Westfield.
West Peru.
West Sullivan--few merchandise items were thrown from store shelves.
Winn.
Winterport--hairline cracks in dry wall.
Winterville--few merchandise items were thrown from store shelves.
Wytopitlock--few merchandise items were thrown from store shelves.

Massachusetts--
Boston--few windows were cracked, few merchandise items were thrown from

store shelves.
Cambridge--An end table moved six inches, house shook violently (press report).
New Hampshire--
Alton--light furniture was overturned.
Bartlett.
Groveton--few merchandise items were thrown from store shelves.
Laconia.
Lebanon.
Vermont--
East Ryegate.
Northfield.
Saint Johnsbury.
White River Junction.

Intensity IV:
Connecticut--Bridgeport, Endfield, Hartford, South Windsor (all press reports).
Maine--Addison, Alfred, Andover, Ashville, Augusta, Bass Harbor, Beals, Bingham, Birch Harbor, Blaine, Bowdoinham, Brewer, Brookton, Brooklin, Brownville, Brunswick, Buckfield, Camden, Cape Elizabeth, Castine, Charleston, Cherryfield, Clayton Lake, Columbia Falls, Coopers Mills, Costigan, Crouseville, Cumberland Center, Danville, Dixmont, Dover-Foxcroft, Eagle Lake, East Baldwin, East Eddington, East Newport, East Millinocket, Eastport, Enfield, Estcourt Station, Fairfield, Fort Kent Mills, Franklin, Freedom, Frenchville, Garland, Gorham, Grand Isle, Grand Lake Stream, Greenville, Guilford, Hancock, Harrington, Harrison, Howland, Jay, Jefferson, Jonesboro, Jonesport, Kingman, Lee, Levant, Lincolnville Center, Lisbon, Lisbon Center, Lisbon Falls, Livermore, Machias, Machiasport, Madawaska, Madison, Manchester, Mattawamkeag, Meddybemps, Medway, Mexico, Millinocket, Milo, Minot, Monmouth, Morrill, Naples, New Limerick, Newport, New Sharon, New Sweden, New Vineyard, Norridgewock, North Amity, North Leeds, North Monmouth, North New Portland, North Turner, North Waterboro, North Waterford, North Whitefield, Olamon, Old Orchard Beach, Old Town, Orient, Orland, Oxford, Palermo, Passadumkeag, Patten, Pembroke, Penobscot, Perham, Plaisted, Portland, Red Beach, Sabattus, Saint Agatha, Salsbury Cove, Sargentville, Seal Harbor, Searsmont, Sebago Lake, Seboeis, Sherman Mills, Sherman Station, Sinclair, Skowhegan, Smithfield, Soldier Pond, Solon, South China, South Freeport, South Gouldsboro, South Paris, Southwest Harbor, Stacyville, Standish, Steep Falls, Stillwater, Stratton, Strong, Sullivan, Surry, Temple, Thomaston, Topsham, Union, Vanceboro, Waite, Warren, Washington, Waterville, West Bethel, Westbrook, West Enfield, West

Farmington, West Forks, West Rockport, Whiting, Wilton, Winter Harbor, Woolwich.
Massachusetts--Beverly, Brookline (press report), Chatham, Chelmsford, Easthampton, Greenfield, Lowell, Northampton, Peabody, Raynham, Rockport, Rowley, Springfield (press report), Swampscott (press report), Wakefield, Westfield (press report).
New Hampshire--Alton Bay, Center Conway, Dover, Epping, Haverhill, Hill, Littleton, Milan, Milford, New Durham, Newport, North Haverhill, North Stratford, Orford, Pike, Pittsburg, Rollinsford, Silver Lake, Stinson Lake, Warren, West Lebanon, West Ossipee, Whitefield, Wilmot Flat, Woodsville.
New York--Schenectady.
Rhode Island--Providence.
Vermont--Canaan, East Calais, East Thetford, Forest Dale, Hardwick, Island Pond, Lower Waterford, Newbury, South Barre, Wells River, Wilder.

Intensity III:
Maine--Auburn, Bath, Belgrade, Bethel, Blue Hill, Bradford, Brooksville, Bucks Harbor, Burnham, Casco, China, Clinton, Cornish, Cutler, Damariscotta, Deer Isle, East Yarmouth (press report), East Poland, Gray, Greenville Junction, Hampden, Hancock, Hinckley, Hiram, Kents Hill, Kingfield, Lewiston, Liberty, Locke Mills, Long Island, Lovell, Mechanic Falls, Monroe, Moody, North Windham, Otter Creek, Paris, Pittsfield, Poland, Rangeley, Readfield, Rockland, Rumford, Shawmut, Shirley Mills, South Gardiner, South Windham, Springfield, Steuben, Weeks Mills, Weld, West Kennebunk, West Paris, Windsor, Yarmouth.
Massachusetts--Amesbury, Byfield, Essex, Haverhill, Sandwich (press report), Westford.
New Hampshire--Belmont, Campton, Canaan, Center Ossipee, Concord, Errol, Exeter, Grafton, Hancock, Jackson, Keene, Lisbon, Lyme, Melvin Village, Monroe, North Woodstock, Tamworth, Twin Mountain, Underhill Center.
New York--Albany (press report), Fishers Islands, Hudson, Hudson Falls.
Rhode Island--East Providence (press report).
Vermont--Barnet, Barre, Barton, Beecher Falls, Brattleboro (press report), Burlington (press report), Derby Line, Fairfield, Guildhall, Hyde Park, Middlesex (press report), Montgomery Center, Montpelier, Newport, North Hartland, Norton, Perkinsville, Plainfield (press report), Rochester, Saint Johnsbury (press report), Salisbury, South Ryegate, Strafford, West Barnet.

Intensity II:
Connecticut--New London, Windsor Lock.
Maine--Abbot Village, Albion, Brewer, Dresden, East Boothbay, Gouldsboro, Round Pont, Sangerville, South Berwick, Sunset, York Beach.
Massachusetts--Merrimac, West Newbury.
New Hampshire--Center Harbor, Durham, Francestown, Greenfield, Greenland, Hanover, Lincoln, Madison, Mont Vernon, Piermont, Rutland, Thetford Center.
Vermont--Hartford, Irasburg, Lyndon Center, Orleans, Plainfield, Wolcott.
Felt:
Connecticut--Bethel, Cheshire, Milford, Newtown, Redding, Wilton.
Maine--LaGrange.
Massachusetts--Lawrence, Sunderland, Taunton.

9 January (G) New Brunswick, Canada
Origin time: 16 36 42.9
Epicenter: 47.02 N., 66.65 W.
Depth: 6 km
Magnitude: 5.1mb(G),3.9MS(G), 5.0Mn(V) 5.3Mn(O)

This event is an aftershock of the earthquake at 12 53 51.9 UTC listed above. It was felt over much of the same area but was not canvassed for detailed intensity data and could not be mapped. Most newspaper articles included the effects of this earthquake with those of the earlier event. The maximum intensity is about V in the United States.

11 January (G) New Brunswick, Canada
Origin time: 21 41 08.0
Epicenter: 46.97 N., 66.66 W.
Depth: 7 km
Magnitude: 5.4mb(G), 4.5MS(G), 5.5Mn(V), 5.5Mn(O)

This event is an aftershock of the earthquake of January 9, 12 53 51.9 UTC, listed above. It was felt over an area of approximately 125,000 km^2 of Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont (fig. 16).

Intensity VI:
Maine--
Caribou--one report of a cracked foundation, slight damage to concrete bridges, hairline cracks in interior walls, few merchandise items were thrown from store shelves, few glassware were broken, it was felt by many.
Haynesville--large cracks in plaster walls, broken underground pipes, large cracks in streets, it was felt by many.
Loring AFB--minor cracks in control tower walls, cracked dry wall.
Presque Isle--one report of cracked foundation and cinderblock walls, large cracks in streets and sidewalks, cracked chimneys, it was felt by many.
Saint Francis--one report of a cracked reinforced concrete foundation, hairline cracks in interior walls, few glassware were broken, few windows were cracked, it was felt by all.

MAINE--Continued

Intensity V: The most common effects at the places listed below were that few small objects overturned and fell and a few merchandise items were thrown from store shelves.
Maine--
Ashland--hairline cracks in plaster walls.
Bridgewater.
Brownville Junction--ground cracks on dry and level ground.
Dennyville--hairline cracks in dry wall.
East Sebago.
Exeter.
Fryeburg--hairline cracks in plaster walls.
Hollis Center.
Limestone.
Monticello--hairline cracks in plaster walls.
Quimby.
Saco--few windows were cracked, hairline cracks in interior walls, water splashed onto sides of lakes.
Saint David.
Stockholm--moving vehicles were rocked slightly.
Veazie--furniture was moved.
Waterville--hanging pictures fell, few glassware were broken.
West Sullivan.
Whitefield--few windows were cracked.
Winterville--few windows were cracked, few glassware were broken, hairline cracks in dry wall.
Massachusetts--
Boston--few windows were cracked, few glassware were broken.
Intensity IV:
Maine--Andover, Augusta, Bass Harbor, Beals, Bingham, Blaine, Brooklin, Brookton, Brunswick, Buckfield, Burlington, Canaan, Castine, Cherryfield, Clinton, Columbia Falls, Costigan, Crouseville, Cumberland Center, Danville, Eagle Lake, East Baldwin, East Machias, Easton, Estcourt Station, Fairfield, Falmouth, Fort Kent Mills, Frankfort, Freedom, Gardiner, Gorham, Grand Lake Stream, Grand Isle, Greenville, Hancock, Harrington, Houlton, Hulls Cove, Jonesboro, Kenduskeag, Kents Hill, Kingman, Lewiston, Lille, Lincoln, Lisbon Falls, Machias, Machiasport, Madawaska, Mapleton, Meddybemps, Millinocket, Minot, New

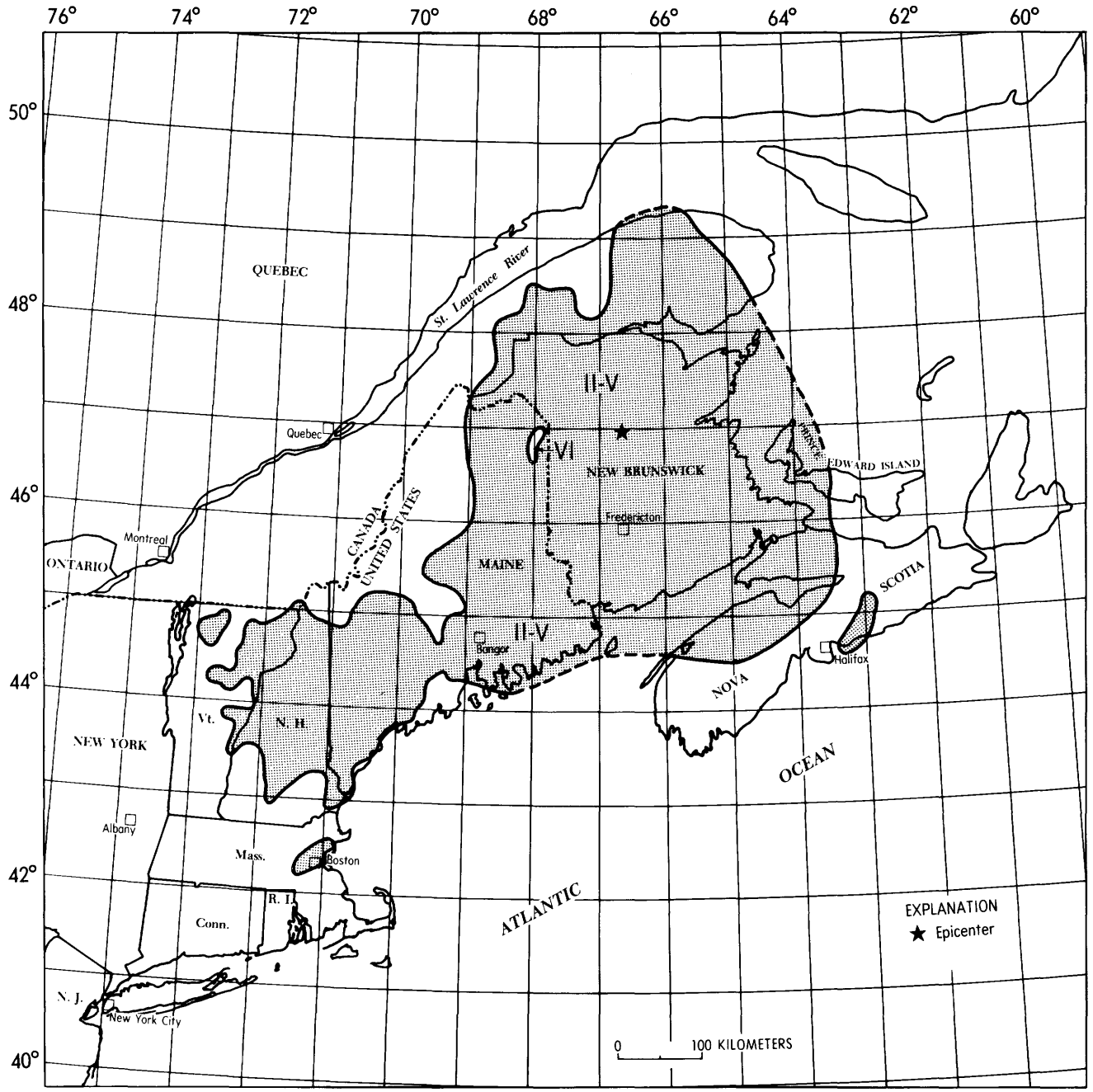

Figure 16. Isosoeismal map of the northeastern United States and eastern Canada for the New Brunswick, Canada earthquake of 11 January 1982, 21 41 08.0 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals. Isoseismals in Canada are based on data from Drysdale and others (1982).

Sweden, New Vineyard, Norridgewock, North Amity, Northeast Harbor, North Leeds, North Monmouth, North New Portland, Olamon, Orono, Oxbow, Pembroke, Penobscot, Perham, Phillips, Plaisted, Prospect Harbor, Robbinston, Roque Bluffs (press report), Sabattus, Scarborough, Seal Harbor, Searsmont, Sheridan, Sherman Station, Sinclair, Smyrna Mills, South Freeport, South Paris, Stacyville, Stillwater, Stratton, Temple, Topsfield, Upper Frenchville, Van Buren, Vanceboro, Washburn, Weld, Westbrook, West Farmington, Westfield, Whitneyville, Wilton, Wytopitlock.

Massachusetts--Beverly Farms, East Lynn (press report), East Boston (press report), Logan International Airport, North Andover, Rockport, Winthrop (press report).

New Hampshire--Alton, Colebrook, Danbury, Francestown, Hanover, Madison, New Durham, North Haverhill, North Stratford, Orford, Silver Lake.

New York--Hudson.

Vermont--Bakersfield, Greensboro, Plainfield, Rutland, Saint Johnsbury, South Barre, Wilder.

Intensity III:

Connecticut--East Hartford (press report), New Haven (press report), Stafford Springs.

Maine--Auburn, Bangor, Bath, Belgrade, Belgrade Lakes, Benedicta, Bethel, Brownville, Bucksport, China, Cutler, East Millinocket, Enfield. Fort Kent, Freeport, Frenchville, Friendship, Hinckley, Hudson, Jonesport, Kingfield, Lincoln Center, Lisbon Center, Livermore, Locke Mills, Lovell, Madison, Milbridge, Milford, Newport, North Waterboro, North Windham, Norway, Orland, Oxford, Paris, Passadumkeag, Patten, Perry, Portland, Princeton, Rangeley, Rumford, Saint Agatha, Salsbury Cove, Sargentville, Seboeis, Smithfield, Soldier Pond, South China, South Gardiner, Southwest Harbor, South Windham, Springfield, Standish, Steuben, Strong, Waite, Weeks Mills, West Bethel, Wilder, Woodland, Yarmouth, York Beach.

Massachusetts--Chatham, Greenfield, Malden (press report), Peabody.

New Hampshire--Chocorua, Concord, Errol, Exeter, Glen, Henniker, Hill, Keene, Monroe, Pike, Twin Mountain, Warren, West Ossipee, Wilmot Flat, Woodsville.

Rhode Island--East Providence (press report), Providence.

Vermont--Barre, Beecher Falls, Burlington, East Thetford, Ely, Hardwick, Island Pond, Jeffersonville, Lyndonville (press report), Middlesex (press report), Montgomery Center, Moretown, Newbury, Strafford.

Intensity II:

Maine--Alfred, Biddeford, Brooksville, Dixfield, Dresden, Franklin, Howland, Lisbon, Manchester, Orrington, Palermo, Sherman Mills, Solon, West Enfield.

Massachusetts--Hathorne, Haverhill.

New Hampshire--Alton Bay, Center Barnstead, Durham, Enfield, Greenland, Tamworth.

New York--Albany (press report).

Vermont--Fairfield, North Hartland, Orleans, Tunbridge, Wells River, Windsor.

Felt:

Maine--Brewer (press report), Bucks Harbor, Dedham, Hampden (press report), Winter Harbor, Winterport (press report).

Massachusetts--Arlington, Chesire, Lynn, Lynnfield, Revere, Salem, Saugus, Wellesley (all from press reports).

19 January (J) Central New Hampshire

Origin time: 00 14 42.7

See New Hampshire listing.

26 March (J) Southern Maine

Origin time: 14 57 39.8
Epicenter: 44.54 N., 69.53 W.
Depth: 7 km
Magnitude: 2.4Mn(J), 2.3MD(J).

Felt at Albion (press report), China (press report), and Waterville (J).

31 March (O) New Brunswick, Canada

Origin time: 21 02 20.0
Epicenter: 47.00 N., 66.60 W.
Depth: 5 km
Magnitude: 5.0mb(G), 4.5Mn(J), 4.8Mn(O)

Intensity V:

Maine--

Easton--few small objects were overturned and fell, it was felt by many.

Mapleton--few small objects were overturned and fell, it was felt by many.

Saint David--few merchandise items were thrown from store shelves, few small objects were overturned and fell, it was felt by many.

Saint Francis--few windows were cracked, few small objects fell, a report of a cracked chimney, it was felt by many.

Intensity IV:

Maine--Bridgewater, Crouseville, Grand Isle, Mars Hill, Monticello, New Limerick, Oakfield, Stockholm, Van Buren.

Intensity III:

Maine--Blaine, Brookton, Lille, Limestone, Lubec, Perham, Presque Isle, Sheridan, Upper Frenchville, Waite, Washburn.

Vermont--Bethel.

Intensity II:

Maine--New Sweden, Sherman Mills, Vance-

MAINE--Continued

boro, Waterville, Westfield.
Massachusetts--Beverly.

11 April (O) New Brunswick, Canada
Origin time: 18 00 51.4
Epicenter: 47.00 N., 66.60 W.
Depth: 5 km
Magnitude: 4.0Mn(G)
Intensity III: Caribou, Limestone.
Intensity II: Easton, Van Buren.

16 June (O) New Brunswick, Canada
Origin time: 11 43 30.0
Epicenter: 46.97 N., 66.99 W.
Depth: 5 km
Magnitude: 4.7mb(G), 4.6Mn(O)

The epicenter was located near the New Brunswick lumbering community of Plaster Rock. The shock is one of the larger of more than 1800 aftershocks which have occurred since the January 9, 1982 earthquake.

Intensity IV: Blaine, Bridgewater, Caribou, Dennysville, Easton, Fort Fairfield, Monticello, Saint Francis, Stockholm (hanging pictures were swung out of place), Westfield.
Intensity III: Ashland, Crouseville, Grand Isle, Houlton, Lile, Limestone, Loring AFB, Medway, Millinocket, New Limerick, New Sweden, North Amity, Perham, Sheridan, Smyrna Mills, Solider Pond, Upper Frenchville, Vanceboro, Waite.
Intensity II: Calais, Presque Isle (press report), Robbinston, Saint Agatha, Topsfield.
Felt: Fort Kent, Saint David.

1 December (J) Central New Hampshire
Origin time: 22 52 23.0

See New Hampshire listing.

MASSACHUSETTS

9 January (G) New Brunswick, Canada
Origin time: 12 53 51.9

See Maine listing.

11 January (G) New Brunswick, Canada
Origin time: 21 41 08.0

See Maine listing.

19 January (J) Central New Hampshire
Origin time: 00 14 42.0

See New Hampshire listing.

MASSACHUSETTS--Continued

27 January (J) Southeastern Massachusetts
Origin time: 18 50 04.7
Epicenter: 41.88 N., 70.95 W.
Depth: 1 km
Magnitude: 3.0Mn(J), 2.8MD(J)

This was the largest of three events occurring within a two-hour period at the same location (J).

Intensity IV: Lakeville (press report), Middleboro.
Intensity III: Brant Rock, Cataumet, Taunton.
Intensity II: Raynham.

31 March (O) New Brunswick, Canada
Origin time: 21 02 20.0

See Maine listing.

MINNESOTA

11 July (G) Eastern South Dakota
Origin time: 19 42 28.4

See South Dakota listing.

MISSISSIPPI

21 January (K) Central Arkansas
Origin time: 00 33 54.8

See Arkansas listing.

MISSOURI

21 January (K) Central Arkansas
Origin time: 00 33 54.8

See Arkansas listing.

11 February (S) New Madrid area
Origin time: 02 54 24.7
Epicenter: 36.61 N., 89.60 W.
Depth: 7 km
Magnitude: 2.8MD(K), 2.8MD(S)

Felt near Ristine (S).

3 July (S) New Madrid Area
Origin time: 04 58 48.9
Epicenter: 36.59 N., 89.96 W.
Depth: 14 km
Magnitude: 2.7MD(K), 2.4Mn(S)

Felt near Malden (K).

MONTANA

20 February (G) Western Montana
Origin time: 09 08 49.6
Epicenter: 46.56 N., 112.09 W.
Depth: 5 km
Magnitude: 2.6ML(G), 2.7ML(D)

Felt at Helena (Montana Bureau of Mines and Geology).

22 February (G) Northwestern Montana
Origin time: 10 43 52.5
Epicenter: 48.10 N., 113.96 W.
Depth: 5 km
Magnitude: 3.1ML(G)
Intensity IV: Big Fork.
Intensity III: Big Arm.
Intensity II: Creston.

9 March (Q) Northwestern North Dakota
Origin: 13 10 50.1

See North Dakota listing.

15 May (G) Western Montana
Origin time: 19 28 19.1
Epicenter: 47.01 N., 112.98 W.
Depth: 5 km
Magnitude: 3.3ML(G)
Intensity IV: Helmville.
Intensity III: Ovando.

5 August (G) Northwestern Montana
Origin time: 01 48 16.5
Epicenter: 47.85 N., 114.35 W.
Depth: 5 km
Magnitude: 2.5ML(G), 2.4MD(D)

Felt in the Echo Lake area, Ferndale, and along the east shore of Flathead Lake (D).

8 August (G) Northwestern Montana
Origin time: 07 48 07.4
Epicenter: 47.93 N., 114.36 W.
Depth: 5 km
Magnitude: 2.3MD(D)

Felt at Bigfork and in Echo Lake area (D).

8 August (G) Northwestern Montana
Origin time: 07 49 23.1
Epicenter: 47.93 N., 114.34 W.
Depth: 5 km
Magnitude: 2.8ML(G), 2.7ML(D)

Felt at Kalispell and in the area north of Flathead Lake (D).

8 August Northwestern Montana
Origin time: 05 15
Epicenter: Not located
Depth: None computed
Magnitude: None computed
Intensity IV: Marion.

MONTANA--Continued

8 August Northwestern Montana
Origin time: 09 45
Epicenter: Not located
Depth: None computed
Magnitude: None computed
Intensity IV: Marion.

21 October (G) Hebgen Lake area
Origin time: 06 05 28.2
Epicenter: 44.72 N., 111.83 W.
Depth: 5 km
Magnitude: 4.4MD(D), 4.4ML(G)
Intensity IV: Belgrade.
Intensity III: Lima, Pony.
Felt: Livingston and Virginia City (telephone report).

26 October (G) Hebgen Lake area
Origin time: 08 26 29.9
Epicenter: 44.75 N., 111.75 W.
Depth: 5 km
Magnitude: 4.3MD(D), 4.6ML(G)
Intensity IV: Virginia City.
Intensity III: Melrose, Twin Bridges.

4 November (G) Hebgen Lake area
Origin time: 09 58 29.9
Epicenter: 44.72 N., 111.72 W.
Depth: 5 km
Magnitude: 4.2ML(G), 4.1MD(D)
Intensity IV: Harrison.

NEBRASKA

15 November (G) Southeastern South Dakota
Origin time: 02 58 22.9

See South Dakota listing.

NEVADA

28 January (E) Southern Nevada
Origin time: 16 00 00.104
Epicenter: 37.09 N., 116.05 W.
Depth: 0 km
Magnitude: 5.9mb(G), 4.5MS(G), 5.6ML(B), 5.8ML(P)

Nevada Test Site Explosion "JORNADA" at 37° 05'28.82" N., 116° 03'04.43" W., surface elevation 1260 m, depth of burial 640 m.

28 January (G) Western Nevada
Origin time: 22 50 43.6
Epicenter: 38.62 N., 118.09 W.
Depth: 5 km
Magnitude: 4.4ML(B)

The effects from this event and the magnitude 4.6 one at 22 51 02.1 UTC are indistinguishable and a maximum intensity V is

assigned to both; however, most of the felt data are listed below. It is one of a swarm of earthquakes.

Intensity V:
Luning--few small objects overturned and fell.
Intensity IV: Hawthorne, Mina.
Intensity III: Gabbs, Minden, Schurz, Silver Springs.

28 January (G) Western Nevada
Origin time: 22 51 02.1
Epicenter: 38.54 N., 118.07 W.
Depth: 5 km
Magnitude: 4.6ML(B)
Intensity V: Luning (see previous earthquake).

28 January (G) Western Nevada
Origin time: 22 59 03.6
Epicenter: 38.61 N., 118.18 W.
Depth: 5 km
Magnitude: 3.7ML(B)

Felt at Luning.

12 February (E) Southern Nevada
Origin time: 14 55 00.083
Epicenter: 37.22 N., 116.46 W.
Depth: 0 km
Magnitude: 5.3Mb(G), 5.3M(B)

Nevada Test Site explosion "MOLBO" at 37°13'27.59" N., 116°27'45.54" W., surface elevation 1900 m., depth of burial 651 m.

12 February (E) Southern Nevada
Origin time: 15 25 00.089
Epicenter: 37.35 N., 116.32 W.
Depth: 0 km
Magnitude: 5.6mb(G), 5.4ML(B)

Nevada Test Site explosion "HOSTA" at 37°20'52.71" N., 116°18'57.97" W., surface elevation 2103 m, depth of burial 640 m.

15 April (B) California-Nevada border region
Origin time: 21 52 09.1
Epicenter: 38.05 N., 118.57 W.
Depth: 7 km
Magnitude: 4.5mb(G), 5.1ML(B)
Intensity IV:
California--El Portal, Lee Vining.
Nevada--Goldfield.
Intensity III:
California--Benton, Bishop, Bridgeport, Merced, Independence.
Nevada--Dyer, Hawthorne, Schurz, Yerington.
Felt:
California--Fish Camp, Shaver Lake.

17 April (E) Southern Nevada
Origin time: 18 00 00.088
Epicenter: 37.02 N., 116.01 W.

Depth: 0 km
Magnitude: 4.5mb(G), 4.3ML(B)

Nevada Test Site explosion "TENAJA" at 37°01'00.54" N., 116°00'35.53" W., surface elevation 1210 m, depth of burial 357 m.

25 April (E) Southern Nevada
Origin time: 18 05 00.084
Epicenter: 37.26 N., 116.42 W.
Depth: 0 km
Magnitude: 5.4mb(G), 5.2ML(B)

Nevada Test Site explosion "GIBNE" at 37°15'21.03" N., 116°25'20.50" W., surface elevation 1964 m, depth of burial 570 m.

6 May (E) Southern Nevada
Origin time: 20 00 00.083
Epicenter: 37.12 N., 116.13 W.
Depth: 0 km
Magnitude: 4.3mb(G), 4.3ML(B)

Nevada Test Site explosion "KRYDDOST" at 37°07'00.62" N., 116°07'36.86" W., surface elevation 1390 m, depth of burial 335 m.

7 May (E) Southern Nevada
Origin time: 18 17 00.110
Epicenter: 37.07 N., 116.04 W.
Depth: 0 km
Magnitude: 5.7mb(G), 4.2MS(G), 5.4ML(B), 5.6ML(P)

Nevada Test Site explosion "BOUSCHET" at 37°04'08.62" N., 116°02'43.67" W., surface elevation 1244 m, depth of burial 564 m.

1 June (G) Southern Nevada
Origin time: 11 02 01.0
Epicenter: 36.00 N., 114.82 W.
Depth: 0 km
Magnitude: 2.6ML(G)
Intensity IV: Boulder City.

4 June (B) Owens Valley area
Origin time: 16 41 48.3

See California listing.

5 June (B) Lake Tahoe area
Origin time: 09 54 24.1

See California listing.

16 June (E) Southern Nevada
Origin time: 14 00 00.849
Epicenter: 37.11 N., 116.02 W.
Depth: 0 km
Magnitude: 4.1ML(B)

Nevada Test Site explosion "KESTI" at 37°06'51.22" N., 116°00'59.68" W., surface elevation 1338 m, depth of burial 289 m.

NEVADA--Continued

24 June (E) Southern Nevada
Origin time: 14 15 00.090
Epicenter: 37.24 N., 116.37 W.
Depth: 0 km
Magnitude: 5.6mb(G), 4.5MS(G), 5.4ML(B)

Nevada Test Site explosion "NEBBIOLO" at 37°14'10.38" N., 116°22'12.63" W., surface elevation 2065 m, depth of burial 640 m.

6 July (G) Southern Nevada
Origin time: 02 10 43.5
Epicenter: 37.69 N., 115.05 W.
Depth: 3 km
Magnitude: 4.1mb(G), 4.2ML(G), 4.7ML(B)
Intensity III: Hiko.

29 July (E) Southern Nevada
Origin time: 20 05 00.083
Epicenter: 37.10 N., 116.08 W.
Depth: 0 km
Magnitude: 4.5mb(G), 4.6ML(B)

Nevada Test Site explosion "MONTEREY" at 37°06'08.30" N., 116°04'29.90" W., surface elevation 1280 m, depth of burial 400 m.

5 August (E) Southern Nevada
Origin time: 14 00 00.090
Epicenter: 37.08 N., 116.01 W.
Depth: 0 km
Magnitude: 5.7mb(G), 4.2MS(G), 5.7ML(B)
5.6ML(P)

Nevada Test Site explosion "ATRISCO" at 37°05'03.14" N., 116°00'23.57" W., surface elevation 1295 m, depth of burial 640 m.

11 August (E) Southern Nevada
Origin time: 15 00 00.000
Epicenter: 37.19 N., 116.05 W.
Depth: 0 km
Magnitude: 3.3ML(G), 3.1ML(B)

Nevada Test Site explosion "QUESO" at 37°11'23.25" N., 116°02'51.66" W., surface elevation 1337 m, depth of burial 216 m.

2 September (E) Southern Nevada
Origin time: 14 00 00.090
Epicenter: 37.02 N., 116.02 W.
Depth: 0 km
Magnitude: 3.3ML(G), 3.5ML(B)

Nevada Test Site explosion "CERRO" at 37°01'11.04" N., 116°00'56.41" W., surface elevation 1212 m, depth of burial 229 m.

23 September (E) Southern Nevada
Origin time: 16 00 00.091
Epicenter: 37.21 N., 116.21 W.
Depth: 0 km
Magnitude: 4.9mb(G), 4.7ML(B)

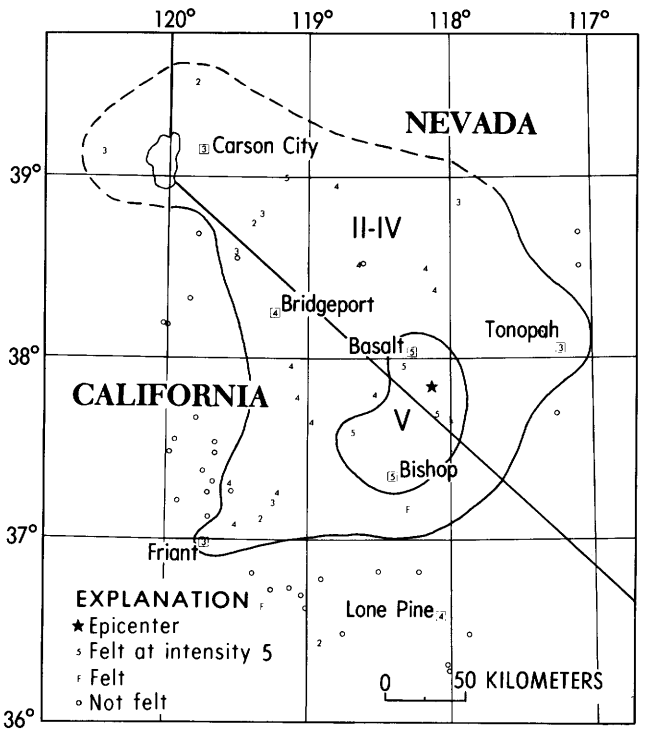

Figure 17. Isoseismal map for the California-Nevada border region earthquake of 24 September 1982, 07 40 24.6 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals are used to represent these intensities at specific sites. A dashed line is an inferred isoseismal.

NEVADA--Continued

Two simultaneous Nevada Test Site explosions "HURON LANDING" and "DIAMOND ACE" at 37°12'43.28" N., 116°12'24.36" W., surface elevation 2260 m, working elevation 1852 m.

23 September (E) Southern Nevada
Origin time: 17 00 00.082
Epicenter: 37.18 N., 116.09 W.
Depth: 0 km
Magnitude: 4.9mb(G), 4.8ML(B)

Nevada Test Site explosion "FRISCO" at 37°10'29.10" N., 116°05'16.06" W., surface elevation 1374 m, depth of burial 451 m.

24 September (B) California-Nevada border region
Origin time: 07 40 24.6
Epicenter: 37.87 N., 118.14 W.
Depth: 17 km
Magnitude: 5.0mb(G), 4.6MS(G), 5.5ML(B), 5.2ML(P)

This earthquake was felt over an area of approximately 50,000 km^2 of California and Nevada (fig. 17).

Intensity V:
California--
Bishop--some glassware was broken, small objects were overturned or fell, water splashed onto sides of swimming pools.
Toms Place--hairline cracks in dry wall, awakened people.
Nevada--
Basalt--people had difficulty standing and walking.
Dyer (Fish Lake Valley)--few merchandise items were thrown from store shelves, few small objects were overturned or fell, hanging pictures fell, felt by all.
Montgomery Pass area--objects were knocked off shelves, a house trailer shifted on its foundation.
Yerington--knocked objects off shelves.
Intensity IV:
California--Auberry, Benton, Bridgeport, June Lake, Lakeshore, Lee Vining, Lone Pine, Mammoth Lakes, Wishon.
Nevada--Hawthorne, Luning, Mina, Schurz.
Intensity III:
California--Big Creek, Friant, Murphys, Topaz.
Nevada--Carson City, Gabbs, Smith, Tonopah.
Intensity II:
California--Shaver Lake, Three Rivers
Nevada--Reno, Wellington
Felt:
California--Bass Lake, Big Pine, Orange Cove.

29 September (E) Southern Nevada
Origin time: 13 30 00.096
Epicenter: 37.09 N., 116.05 W.
Depth: 0 km
Magnitude: 4.1ML(B)

Nevada Test Site explosion "BORREGO" at 37°05'28.69" N., 116°02'41.59" W., surface elevation 1261 m, depth of burial 564 m.

12 November (E) Southern Nevada
Origin time: 19 17 00.103
Epicenter: 37.02 N., 116.03 W.
Depth: 0 km
Magnitude: 4.4mb(G), 4.2ML(B)

Nevada Test Site explosion "SEYVAL" at 37°01'25.21" N., 116°01'55.49" W., surface elevation 1214 m, depth of burial 366 m.

7 December (G) Southern Nevada
Origin time: 09 43 49.6
Epicenter: 36.02 N., 114.83 W.
Depth: 5 km
Magnitude: 3.3ML(G), 3.7ML(P)
Intensity II: Boulder City.

10 December (E) Southern Nevada
Origin time: 15 20 00.090

NEVADA--Continued

Epicenter: 37.03 N., 116.07 W.
Depth: 0 km
Magnitude: 4.6mb(G), 4.6ML(B)

Nevada Test Site explosion "MANTECA" at 37°01'48.66" N., 116°04'18.80" W., surface elevation 1263 m, depth of burial 413 m.

28 December (B) California-Nevada border region
Origin time: 19 06 24.8
Epicenter: 38.03 N., 118.42 W.
Depth: 8 km
Magnitude: 4.7mb(G), 5.2ML(P), 4.9ML(B)
Intensity IV:
California--Benton.
Intensity III:
California--Miramonte.
Nevada--Dyer, Mina, Schurz.
Felt:
California--Bishop and in the Mono Lake area (B).

NEW HAMPSHIRE

9 January (G) New Brunswick, Canada
Origin time: 12 53 51.9

See Maine listing.

11 January (G) New Brunswick, Canada
Origin time: 21 41 08.0

See Maine listing.

19 January (J) Central New Hampshire
Origin time: 00 14 42.7
Epicenter: 43.51 N., 71.62 W.
Depth: 7 km
Magnitude: 4.5mb(G), 4.5Mn(V), 4.7MD(J)

This earthquake was felt over an area of approximately 127,000 km^2 of Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont (fig. 18). It was also felt in Canada. Two aftershocks of magnitude 2.6MD(L) occurred at 0031 and 0055.

Intensity VI:
Massachusetts--
Drury--cracked chimneys.
Westford--bricks fell from chimneys, cracked concrete floor, few glassware were broken; it was felt by many.
New Hampshire--
Ashland--cracked chimneys, few merchandise items were thrown from store shelves, few glassware were broken; it was felt by many.
Bristol--split interior walls, some building damage, cracked plaster walls, few merchandise items were

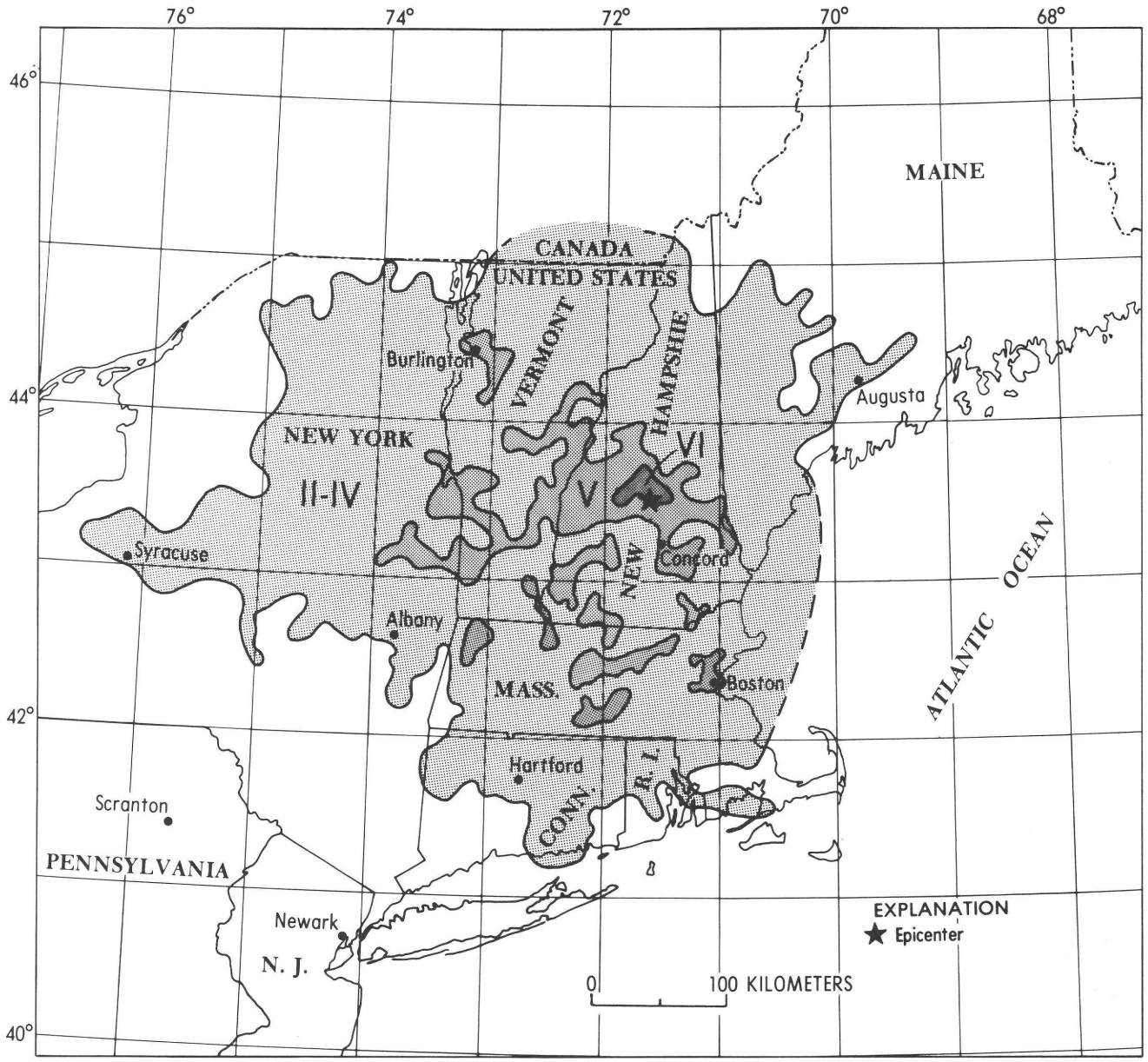

Figure 18. Isoseismal map for the central New Hampshire earthquake of 19 January 1982, 00 14 42.7 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals.

thrown from store shelves, few glassware were broken, few small objects were overturned and fell; it was felt by all.

Danbury--few chimneys were cracked, interior walls had hairline cracks, few merchandise items were thrown from store shelves, few glassware were broken, few small objects were overturned and fell; it was felt by all.

Laconia--large cracks in plaster walls, one report of a cracked foundation, few merchandise items were thrown from store shelves, few glassware were broken, few small objects were overturned and fell, some windows were broken out; it was felt by all.

North Stratford--slight damage to fireplaces, cracked chimneys, hairline cracks in plaster walls, few small objects fell, felt by many.

Vermont--

Bomoseen--cracked chimneys, few glassware were broken, few small objects were overturned and fell, hanging picture out of place.

Chelsea--large cracks in interior walls, building shook strongly, felt by all.

Shaftsbury--cracked chimneys, hairline cracks in dry wall, felt by many.

West Rupert--cracked chimneys, interior walls separated from ceiling or floor, few merchandise items were thrown from store shelves, hanging pictures fell, felt by many.

Intensity V: The most common effects at the places listed below were that few small objects overturned or fell, few glassware or dishes were broken, few merchandise items were thrown from store shelves, few windows were cracked, and hairline cracks appeared in walls of plaster or dry wall.

Connecticut--Old Saybrook, Somers, Stafford Springs, Vernon, West Suffield.

Maine--Berwick, Denmark, East Peru, Harrison, Limington, South Paris, West Poland.

Massachusetts--Adams, Amherst, Ashburnham, Ashland, Auburn, Ayer, Brimfield, Brookfield, Burlington, Charlton City, Chartley, Cherry Valley, Cheshire, Cummington, Dalton, East Douglas, East Princeton, Erving, Goshen (press report), Hardwick, Hubbardston, Leicester, Leominster, Linwood, Medford, Melrose, Mendon, Methuen, Millers Falls, Mount Saint James, Newtonville, North Adams, North Chelmsford (light furniture overturned), North Hatfield, North Oxford, Northfield, Otis, Peabody, Petersham, Princeton, Reading, Revere, Roslindale, Shelburne Falls (hanging pictures fell), Shirley, South Ashburnham, South Barre, South Lancaster, Sturbridge, Templeton,

West Brookfield, West Somerville, Westford, Westwood, Wilkinsonville, Worcester.

New Hampshire--Andover, Belmont, Bradford, Canaan, Center Tuftonboro, Claremont, Deerfield, Derry, Dover, Dublin, East Andover, East Candia, East Swanzey, Elkins (moving vehicles rocked slightly), Enfield, Enfield Center (difficulty in standing), Etna, Fitzwilliam Depot, Franklin, Gilford (press report), Gilmanton, Gilmanton Iron Works, Gilsum, Grafton (standing vehicles rocked moderately, trees and bushes strongly shaken), Groveton, Hampton, Hebron, Hill, Hillsboro, Hinsdale (light furniture overturned), Holderness, Hooksett (difficulty in standing), Jaffrey, Keene (difficulty in standing), Lakeport (press report), Lebanon, Lochmere (difficulty in standing), Loudon (hanging pictures fell), Madison, Melvin Village, Milford, Milton, Milton Mills (moving vehicles rocked slightly), Monroe, New Boston, New Durham, New Ipswich (moving vehicles rocked slightly), North Salem, Orford, Plaistow, Portsmouth Naval Base, Rindge, Rumney, Salem, Sanbornton (difficulty in standing), Spofford, Strafford, Sunapee, Suncook, Tilton, Walpole (moving vehicles rocked moderately), Warren, Washington, Weirs Beach (moving vehicles rocked slightly), Wendell, Westmoreland, Wilmot Flat, Winnisquam, Woodstock (moving vehicles rocked moderately), Woodsville.

New York--Athens (moving vehicles rocked slightly), Au Sable Forks, Diamond Point, Fort Ann, Fort Hunter, Gansevoort, Glens Falls, Gloversville, Granville, Greenwich, Hague, Hartwick, Jay (light furniture overturned), Johnstown (moving vehicles rocked slightly), Lake Placid, Middle Grove, North River, Porter Corners, Potsdam, Putnam Station, Richfield Springs, Schuylerville (disturbed flow of spring water), Shushan, Tupper Lake, Wadhams, Whitehall.

Rhode Island--Coventry.

Vermont--Arlington (light furniture overturned), Ascutney, Bethel, Bolton Valley, Bradford (hanging pictures fell), Brattleboro (hanging pictures fell), Bristol (moving vehicles rocked slightly), Brownsville, Burlington, Cabot, Cavendish, Center Rutland, Chester, Danby, East Montpelier, East Poultney, East Thetford, Ely, Essex, Fairfield, Glover, Groton, Hancock, Hartford, Hartland (moving vehicles rocked moderately), Hartland Four Corners, Huntington Center, Hydeville, Jonesville, Londonderry, Lyman, Lyndon Center, Manchester Center, Newfane,

Newport, Northfield, Northfield Falls (difficulty in standing), North Hartland (a cracked foundation reported), North Thetford, Peru, Proctor, Proctorsville, Reading, Rochester, Rutland (hanging pictures fell), Saint Johnsbury, South Ryegate, South Woodstock, Thetford, Thetford Center (one cracked foundation reported), Tunbridge (difficulty in standing), Vershire, Wells, Wells River, West Dummerston, West Fairlee, West Hartford, West Rutland, West Topsham, Wilder, Wilmington, Windsor, Woodstock.

Intensity IV:

Connecticut--Avon, Bloomfield, Bristol, Clinton, Danielson, Derby, East Hampton, East Woodstock, Enfield, Fabyan, Hanover, Kensington, Litchfield, Melrose, Middlebury, New Hardford, Pequabuck, Plainville, Staffordville, Tolland, Torrington, Washington, Wauregan, Winsted, Woodstock.

Maine--Andover, Brownfield, Buckfield, Buxton (press report), Cape Neddick, Center Lovell, Cornish, East Parsonfield, East Sebago, Fryeburg, Gorham, Hiram, Kennebunkport, Kents Hill, Kezar Falls, Kittery, Limerick, Lisbon Center, Litchfield, Long Island, Lovell, Naples, Newfield, Newry, North Berwick, North Leeds, North Shapeleigh, North Waterboro, Ogunquit, Oxford, Peaks Island, Porter, Portland (press report), Rumford Center, Sanford, South Portland (press report), Standish, Weld, West Baldwin, Westbrook, West Buxton, West Kennebunk, West Sumner, Wilton, York.

Massachusetts--Acton, Amesbury, Ashby, Ashfield, Athol, Baldwinville, Barre, Berlin, Bernardston, Beverly, Billerica, Blackstone, Bolton, Bradford, Brockton (press report), Bridgewater, Buckland, Cambridge, Carlisle, Charlemont, Charlestown, Charlton, Chelmsford, Chester, Chicopee, Clinton, Conway, Danvers, Dartmouth, Dedham (press report), Dover, Dracut, Dunstable, East Arlington, East Boston, East Bridgewater, East Brookfield, East Longmeadow, East Otis, East Taunton, East Templeton, Easton (press report), Fitchburg, Gardner, Grafton, Groton, Grove Hall, Harvard, Haverhill, Heath, Hingham, Holden, Holliston, Holyoke (press report), Hudson, Jefferson, Kearney Square, Lake Pleasant, Lawrence, Leeds, Lincoln, Littleton, Longmeadow (press report), Lowell, Lynn (press report), Lynnfield, Manchaug, Marlborough, Millville, Montague, Natick, New Bedford (press report), New Braintree, North Amherst, Northampton, North Andover, Northborough, North Easton, North Marshfield, North Quincy (press report), North Reading, North Waltham, Oakham, Orange, Orleans,

NEW HAMPSHIRE--Continued

Oxford, Palmer, Pembroke, Pepperell, Plainfield, Quincy (press report), Revere (press report), Rockport, Rowe, Royalston, Russell, Saugus, Saxonville, Shawsheen Village, Shervorn, Shutesbury, South Berlin, South Boston, South Chelmsford, South Deerfield, South Dennis, South Framingham, South Grafton, South Hadley (press report), South Hamilton, South Lee, Spencer, Springfield (press report), Sterling Junction, Stoughton, Stow, Sudbury, Taunton, Tewksbury, Townsend, Tyngsboro, Upton, Wakefield, Wales, Ward Hill, Ware, Webster, Wanham, Westborough, West Boylston, West Groton, Westminster, West Roxbury, West Townsend, West Upton, Whately, Wheelwright, Williamsburg, Winchendon Springs, Windsor, Winthrop (press report), Woburn, Worthington.

New Hampshire--Acworth, Alstead, Alton, Alton Bay, Aschuelot, Atkinson, Auburn, Barnstead, Bartlett, Bath, Bennington, Bethlehem, Campton, Candia, Canterbury, Center Barnstead, Center Ossipee, Center Harbor, Center Sandwich, Charlestown, Chester, Chesterfield, Chocorua, Colebrook, Concord, Contoocook, Conway, Cornish Flat, Drewsville, East Derry, East Hampstead, East Hebron, East Lempster, East Sullivan, East Wakefield, Eaton Center, Francestown, Freedom, Georges Mills, Glencliff, Goffstown, Gorham, Goshen, Grantham, Greenfield, Greenland, Guild, Hampstead, Hanover, Harrisville, Haverhill, Henniker, Hudson, Intervale, Jackson, Jefferson, Kearsarge, Kensington (press report), Kingston, Lancaster, Lempster, Lincoln, Lisbon, Littleton, Londonderry, Lyme, Lyme Center, Manchester, Meadows, Meriden, Merrimack, Mirror Lake, Mont Vernon, Moultonboro, Mount Sunapee, Munsonville, Nashua, Newbury, New Castle, Newfields, New Hampton, New London, Newton, North Chichester, North Hampton, North Haverhill, North Sandwich, North Sutton, Nottingham, Ossipee, Pembroke (press report), Peterborough, Piermont, Pike, Pittsfield, Raymond, Rochester, Rye, Salisbury, Sanbornville, Sandown, South Acworth, South Lyndeboro, South Newbury, South Sutton, Stoddard, Tamworth, Temple, Troy, Twin Mountain, Warner, Weare, West Nottingham, West Ossipee, West Peterborough, West Springfield, West Swanzey, Windham, Wolfeboro, Wonalancet.

New York--Albany, Altona, Argyle, Bakers Mills, Berlin, Bolton Landing, Brant Lake, Clifton Park (press report), Caroga Lake, Central Bridge, Central Square (press report), Chestertown, Clemons, Cleverdale, Clinton, Cold Brook, Colton, Cossayuna, Crown Point, Dannemora, Dolgeville, East Chatham,

Elizabethtown, Elnora, Forestport, Guilderland, Hadley, Hoosick, Hoosick Falls, Hudson Falls, Ilion, Inlet, Johnsburg, Johnsonville, Keene, Keene Valley, Keeseville, Lake George, Lake Luzerne, Maplecrest, Mayfield, Middle Falls, Middle Granville, Minerva, Mineville, Moriah Center, Newport, North Hudson, North Syracuse, Northville, Parishville, Plattsburgh, Prospect, Raquette Lake, Redford, Remsen, Rensselaer (press report), Richmondville, Riparius, Rock City Falls, Rome, Saranac, Saranac Lake, South Colton, South Schroon, Springfield Center, Stony Creek, Ticonderoga, Tribes Hill, Troy, Upper Jay, Voorheesville, Warrensburg, Wells, West Camp, Whallonsburg, White River Junction (a cracked foundation reported), Wilmington, Witherbee.

Rhode Island--Burrillville (press report), Cranston (press report), Foster (press report), Harrisville, Hope, North Scituate, Oakland, Providence, Slocum.

Vermont--Bakersfield, Barnard, Barnet, Bellows Falls, Belmont, Benson, Bondville, Brandon, Bridgewater, Bridgewater Corn, Bridport, Calais, Cambridgeport, Castleton, Charlotte, Chittenden, Concord, Corinth, Cuttingsville, Danville, Derby Line, Dorset, East Arlington, East Barre, East Corinth, East Dorset, East Ryegate, East Saint Johns, East Wallingford, Eden, Fair Haven, Fairfax, Florence, Forest Dale, Gaysville, Grafton, Grand Isle, Granville, Guildhall, Highgate Springs, Hyde Park, Island Pond, Jacksonville, Jamaica, Jericho, Killington, Lake Elmore, Lower Waterford, Ludlow, Lyndon, Marshfield, McIndoe Falls, Middlebury, Middletown Springs, Milton, Monkton, Morgan, Mount Holly, Newbury, New Haven, Newport Center, North Bennington, North Concord, North Montpelier, North Pomfret, North Troy, Norwich, Orleans, Orwell, Pasumpsic, Pawlet, Perkinsville, Pittsford, Plymouth, Post Mills, Pownal, Putney, Randolph Center, Ripton, Roxbury, Saint Albans Bay, Salisbury, Saxtons River, Sharon, Shelburne, Sheldon, Shoreham, South Barre, South Dorset, South Londonderry, South Newbury, South Pomfret, South Royalton, South Strafford, Springfield, Starksboro, Stockbridge, Stowe, Strafford, Taftsville, Topsham, Tunbridge, Underhill Center, Vergennes, Vernon, Waitsfield, Wallingford, Wardsboro, Warren, Washington, Waterbury Center, Waterville, Websterville, West Barnet, West Brattleboro, West Charleston, West Danville, Westfield, West Halifax, Westminster, Westminster Station, West Townshend, Weston, Williamstown, Woodbury, Worcester.

NEW HAMPSHIRE--Continued

Intensity III:

Connecticut--Abington, Barrington (press report), Colchester, Colebrook, East Canaan, East Lyme, Eastford, Glastonbury, Granby, Grosvenor Dale, Hartford (press report), Higganum, Huntington (press report), Jewett City, Manchester, Mechanicsville, Moodus, North Granby, North Grosvenordale, North Smithfield (press report), Pomfret Center, Rocky Hill, Sharon, Somersville, South Kent, South Lyme, South Woodstock, Stamford (press report), Sterling, Suffield, Thompson, Uncasville, Westbrook, West Cornwall, West Willington, Willimantic, Windsor, Windsor Locks, Yantic.

Maine--Alfred, Belgrade, Bethel, Biddeford, Bryant Pond, Cape Elizabeth, Cape Porpoise, Danville, East Poland, East Stoneham, Eliot, Emery Mills, Freedom, Gray, Hallowell, Hanover, Kittery Point, Lisbon Falls, Locke Mills, Lovell, Maplewood, Milford, Monmouth, Moody, New Sharon, North Fryeburg, Ocean Park, Palermo, Paris, Rangeley, Rumford, Rumford Point, Sabattus, Scarborough, Sebago Lake, Shapleigh, South Berwick, South Hiram, South Waterford, Waterboro, Wells, West Bethel, West Bowdoin, West Newfield, West Paris, Woodfords, York Harbor.

Massachusetts--Agawam, Astor, Becket, Bedford, Beverly Farms, Blandford, Boston, Boylston, Brant Rock, Brighton, Brookline, Cathedral, Chesterfield, Colrain, Concord, Cushman, Dedham, Deerfield, East Dedham, Easthampton, East Lynn, Elmwood, Feeding Hills, Fiskdale, Framingham, Gilbertville, Gloucester, Granby, Granville, Greenfield, Griswoldville, Hadley, Hampden, Hatfield, Hathorne, Highlands, Hollis Center, Hopedale, Huntington, Hyde Park, Leverett, Ludlow, Lunenburg, Marblehead, Merimac, Middlefield, Milford, Morningdale, Needham, New Salem, Newton Upper Falls, North Adams (press report), Northbridge, North Brookfield, North Grafton, Oakdale, Pittsfield (press report), Plymouth, Rowley, Rutland, Sandisfield, Sharon, Shattuckville, Somerville, Southbridge, South Carver, South Easton, Sterling, Thorndike, Three Rivers, Topsfield, Turners Falls, Uxbridge, Walpole, Washington (press report), Watertown, Wendell, Wendell Depot, West Boxford, West Bridgewater, Westfield, West Lynn (press report), West Millbury, West Newton, West Springfield, West Sullivan, Whitinsville, Williamstown, Winchendon, Woodville, Woronoco.

New Hampshire--Brookline, Center Conway, Center Strafford, Center Tuftonboro, Danville, Epping, Exeter, Fitzwilliam,

Fremont, Greenville, Hancock, Marlborough, Milan, Newton Junction, Northwood, North Woodstock, Pelham, Sandwich, Somersworth, South Effingham, Waterville Valley, Wentworth, West Chesterfield, Whitefield, Winchester.
New York--Adirondack, Ausable Chasm, Averill park, Ballston Lake, Berne, Boonville, Broadalbin, Cambridge, Canajoharie, Churubusco, Claverack, Colonie (press report), Comstock, Corinth, Cropseyville, Delmar, East Syracuse (press report), East Worcester, Esperance, Fort Johnson, Frankfort, Gallupville, Glenmont, Hannawa Falls, Hudson, Huletts Landing, Indian Lake, Lake Pleasant, Lewis, Little Falls, Liverpool (press report), Lyon Mountain, Malone, Mattituck, Mellenville, Melrose, Mohawk, Moriah, Morrisonville, Newcomb, New Scotland, Newtonville, Nicholville, North Hoosick, Old Forge, Peru, Poland, Port Henry, Ravena, Saratoga Springs, Schachticoke, Schroon Lake, Silver Bay, Sloansville, Stottville, Stratford, Syracuse (press report), West Davenport, Westport, Wevertown, Whippleville, Willsboro.
Rhode Island--Chepachet, Exeter, Fiskeville, Mapleville, Slatersville, Warwick, Woonsocket.
Vermont--Barre, Barton, Beecher Falls, Brookfield, Cambridge, Craftsbury, East Burke, East Dover, East Haven, East Middlebury, Gilman, Graniteville, Greensboro, Greensboro Bend, Hardwick, Hinesburg, Irasburg, Jeffersonville, Leicester Junction, Marlboro, Montgomery Center, Moretown, Morrisville, Moscow, Mount Snow, Peacham, Plainfield, Readsboro, Richford, South Hero, Waterbury, West Burke, West Dover, West Glover, West Newbury, West Wardsboro, Whitingham, Whiting, Wolcott.

Intensity II:
Connecticut--Canterbury, Morris, Putnam, Quinbaug, South Glastonbury, Waterford.
Maine--Brooksville, Brownville, East Waterford, New Gloucester, Weeks Mills.
Massachusetts--Auburndale, East Falmouth, Essex, Hanson, Hinsdale, Raynham, Southfield, Tyringham, West Hatfield.
New Hampshire--Pittsburg, Rollinsford.
New York--Bloomingdale, Earlville, Fultonville, Glenford, Manlius, North Bangor, Onieda, Schwuler Lake, Speculator, Sprakers, West Lebanon.
Rhode Island--Ashaway, Tiverton.
Vermont--East Charleston, Rupert, Sutton, West Pawlet.

Felt:
Connecticut--Columbia, Mansfield Center, Montville (press report).
Maine--Casco, East Waterboro, Strong.

NEW HAMPSHIRE--Continued

Massachusetts--Millbury, Waltham (press report).
New Hampshire--Antrim, Durham, Northfield (press report).
New York--Canastota, Cazenovia, Lysander, Palermo (press report).
Vermont--Bethel (press report), Burlington (press report), Craftsbury, Common, Lunenburg, Rutland (press report).

27 January (J) Central New Hampshire
Origin time: 16 43 14.5
Epicenter: 43.54 N., 71.61 W.
Depth: 9 km
Magnitude: 2.9Mn(J), 2.6MD(L)

Intensity V:
Laconia--hairline cracks in plaster walls, felt by many.
Lochmere--few glassware were broken, few small objects were overturned and fell.
Weare--few glassware were broken, few small objects were overturned and fell.

Intensity IV: Bristol, Center Harbor, Danbury, Hill, Sanbornton.

Intensiy III: Alton, Belmont (press report), Contoocook, Franklin, Guild, Penacook, Wendell, West Ossipee.

Intensity II: Center Sandwich, New Durham.

15 February (J) Central New Hampshire
Origin time: 20 13 46.5
Epicenter: 43.09 N., 71.49 W.
Depth: 2km
Magnitude: 2.1Mn(J), 1.9MD(J)

Felt at Tilton (J).

1 December (J) Central New Hampshire
Origin time: 22 52 22.9
Epicenter: 43.62 N., 71.52 W.
Depth: 6 km
Magnitude: 3.0Mn(J), 3.0MD(J)

This earthquake was felt at many towns near Lake Winnipesaukee in the Laconia-Meredith area (press report).

Residents in the Lakeport section of Laconia thought their furnaces had exploded or they described the sound as similar to a sonic boom (press report).

Intensity IV:
New Hampshire--Laconia (Lakeport section) (press report).

Intensity III:
Maine--Eliot.
New Hampshire--Meredith (press report).

Intensity II:
Maine--East Waterboro.
New Hampshire--Hampton, Lebanon.
Vermont--Springfield.

NEW HAMPSHIRE--Continued

Felt:
Maine--North Fryeburg, Scarborough.
New Hampshire--Sanbornton (J).

1 December (J) Central New Hampshire
Origin time: 23 05 01.6
Epicenter: 43.61 N., 71.53 W.
Depth: 2 km
Magnitude: 2.2Mn(J)

Felt in the Laconia-Meredith area (press report).

NEW JERSEY

12 April (G) Western New Jersey
Origin time: 22 14 31.2
Epicenter: 40.05 N., 74.82 W.
Depth: 7 km
Magnitude: 2.8MD(L), 2.4Mn(L)

Felt in Burlington, Camden, and Mercer Counties, New Jersey and in Bucks and Montgomery Counties, Pennsylvania (fig. 19).

Intensity V:
New Jersey
Hainesport--hanging pictures fell, many glassware and dishes were broken.
Maple Shade--few merchandise items were thrown from store shelves, few small objects were overturned and fell, few glassware and dishes were broken.
Pennsylvania
Croyden--few windows were cracked, few small objects were overturned and fell, water was splashed onto sides of lakes, ponds, or swimming pools.
Intensity IV:
New Jersey--Bordentown, Magnolia, Pemberton, Rancocas, Riverton, Roebling.
Pennsylvania--Bensalem, Langhorne, Levittown.
Intensity III:
New Jersey--Beverly, Jobstown, Juliustown, Kirkwood, Marlton, Medford, Moorestown, Mount Holly, Palmyra, Riverside, Willingboro.
Pennsylvania--Bryn Athyn, Cheltenham, Wyncote.
Intensity II:
Pennsylvania--Jenkintown, Minisink Hills.
Felt:
New Jersey--Lumberton.

NEW MEXICO

16 March (G) Eastern New Mexico
Origin time: 11 03 02.7
Epicenter: 35.36 N., 103.27 W.

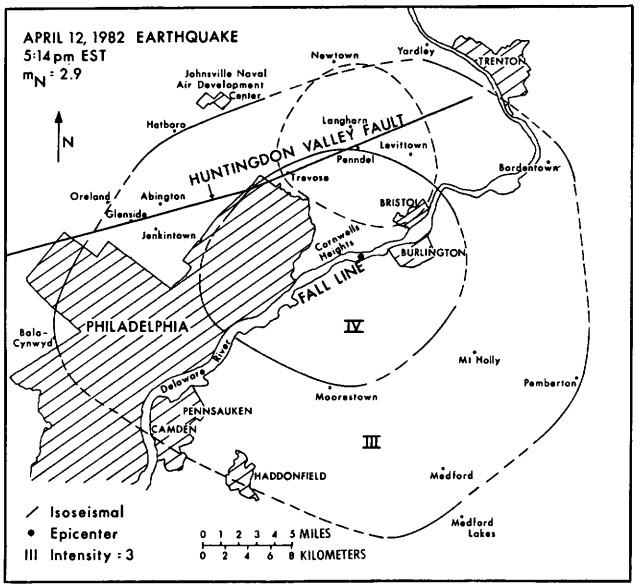

Figure 19. Isoseismal map for the western New Jersey earthquake of 12 April 1982, 22 14 31.2 UTC. The area encircled by the dashed line outlines the felt area of the 12 May 1982, 17 01 Pennsylvania earthquake. Roman numerals represent Modified Mercalli intensities between isoseismals (provided by R. Bischke, Temple University).

NEW MEXICO--Continued

Depth: 5 km
Magnitude: 3.1Mn(T)
Intensity III: Logan.

18 May (G) Western New Mexico
Origin time: 06 00 08.5
Epicenter: 34.17 N., 106.95 W.
Depth: 9 km
Magnitude: 2.8ML(G)
Intensity IV: Socorro (press report).

18 May (G) Western New Mexico
Origin time: 06 08 38.4
Epicenter: 34.20 N., 106.90 W.
Depth: 6 km
Magnitude: 2.8ML(G)
Intensity IV: Socorro (press report).

24 May (G) Western New Mexico
Origin time: 06 32 51.7
Epicenter: 34.17 N., 106.95 W.
Depth: 6 km
Magnitude: 2.9ML(G)

Felt at Socorro (telephone report).

31 May (G) Northwestern New Mexico
Origin time: 09 37 08.5
Epicenter: 35.10 N., 106.80 W.
Depth: 6 km

NEW MEXICO--Continued

Magnitude: 2.0ML(G)
Intensity IV: West Mesa section of Albuquerque (press report).

20 September (G) Southern New Mexico
Origin time: 03 55 17.2
Epicenter: 33.95 N., 107.06 W.
Depth: 11 km
Magnitude: 2.9ML(G), 3.5Mn(T)
Intensity IV: Socorro.
Intensity III: Magdalena.

7 October (G) Central New Mexico
Origin time: 12 41 25.9
Epicenter: 34.31 N., 106.82 W.
Depth: 4 km
Magnitude: 2.4ML(G)

Felt at Socorro.

14 October (G) Texas Panhandle
Origin time: 12 52 46.3

See Texas listing.

NEW YORK

9 January (G) New Brunswick, Canada
Origin time: 12 53 51.9

See Maine listing.

11 January (G) New Brunswick, Canada
Origin time: 21 41 08.0

See Maine listing.

19 January (J) Central New Hampshire
Origin time: 00 14 42.7

See New Hampshire listing.

31 August (L) Eastern New York
Origin time: 10 16 58.2
Epicenter: 43.21 N., 74.20 W.
Depth: 4 km
Magnitude: 2.6Mn(L), 3.0MD(L)
Intensity III: Northville (press report).

NORTH CAROLINA

24 September (K) Eastern Tennessee
Origin time: 21 57 42.5

See Tennessee listing.

24 September (K) Eastern Tennessee
Origin time: 22 19 16.9

See Tennessee listing.

NORTH DAKOTA

9 March (Q) Northwestern North Dakota
Origin time: 13 10 50.1
Epicenter: 48.51 N., 104.03 W.
Depth: 18 km
Magnitude: 3.3Mn(Q)
Intensity III:
Montana--Antelope (telephone report).
North Dakota--Grenora (telephone report).

OKLAHOMA

3 May (T) Southern Oklahoma
Origin time: 07 54 48.7
Epicenter: 33.99 N., 96.47 W.
Depth: 5 km
Magnitude: 3.1Mn(T)
Intensity VI: Durant--A concrete house slab moved that broke water pipes and a ceiling cracked (press report).

OREGON

1 March (W) Mount St. Helens area
Origin time: 17 40 04.5

See Washington listing.

21 November (G) Northwestern Oregon
Origin time: 04 57 32.8
Epicenter: 45.90 N., 122.89 W.
Depth: 22 km
Magnitude: 2.5ML(G)

Felt in the Woodland, Washington area (press report).

PENNSYLVANIA

3 February (X) Southwest Pennsylvania
Origin time: 04 28 20.6
Epicenter: 40.21 N., 79.05 W.
Depth: 2 km
Magnitude: 2.6Mn(X)
Intensity III: Ferndale, Shanksville.
Intensity II: Jennerstown.

12 April (G) Western New Jersey
Origin time: 22 14 31.2

See New Jersey listing.

12 May Eastern Pennsylvania
Origin time: 17 01
Epicenter: Not located
Depth: None computed
Magnitude: None computed

Felt in the Northampton and Upper Southampton Townships near Philadelphia (press

PENNSYLVANIA--Continued

report). R. Bischke, Temple University, reported a felt area extending from Bristol north to Newtown and from Trevose east to Levittown (fig. 19).

12 May (G) Southeastern Pennsylvania
Origin time: 18 29 33.0
Epicenter: 40.41 N., 77.96 W.
Depth: 0 km
Magnitude: 3.0MD(X)

Explosion set off by the Pennsylvania Sand Corporation near Mt. Union, Pennsylvania. Computed origin time.

PUERTO RICO

26 January (G) Off the east coast
Origin time: 11 49 39.8
Epicenter: 18.03 N., 65.32 W.
Depth: Normal
Magnitude: 4.7mb(G)

Felt in the eastern part of Puerto Rico.

Intensity V: Roosevelt Roads Naval Station--a few small objects were overturned and fell, felt by many.
Felt: Caguas

15 September Central Puerto Rico
Origin time: 19 34
Epicenter: Not located
Depth: Not computed
Magnitude: None computed

Felt at San Juan and Caguas (telegraphic report).

23 November Western Puerto Rico
Origin time: 23 15
Epicenter: Not located
Depth: None computed
Magnitude: None computed
Intensity IV: Ponce (press report).

RHODE ISLAND

9 January (G) New Brunswick, Canada
Origin time: 12 53 51.9

See Maine listing.

11 January (G) New Brunswick, Canada
Origin time: 21 41 08.0

See Maine listing.

19 January (J) Central New Hampshire
Origin time: 00 14 42.7

See New Hampshire listing.

RHODE ISLAND--Continued

6 November (J) Northern Rhode Island
Origin time: 03 50 07.6
Epicenter: 41.79 N., 71.56 W.
Depth: 2 km
Magnitude: 1.8MD(J)

A group of three tremors was reported felt and heard in the Crompton area of West Warkwick. The police reported no damage, "just a lot of people shaken up and a lot of houses rattled" (press report).

Intensity IV: Crompton (press report).

SOUTH CAROLINA

1 March (G) Southeastern South Carolina
Origin time: 03 33 13.6
Epicenter: 32.94 N., 80.14 W.
Depth: 7 km
Magnitude: 3.0Mn(G), 2.8ML(F), 2.8MD(K)

Felt strongest in an area between Middleton Gardens and Kings Grant subdivision south of Summerville.

Intensity IV: 2 miles south of Summerville.
Intensity III: Bonneau, Ladsen, Lincolnville, Summerville.
Intensity II: Charleston Heights.

2 March (Y) Central South Carolina
Origin time: 16 48 08.8
Epicenter: 34.34 N., 81.35 W.
Depth: 2 km
Magnitude: 2.5Mn(G), 2.7ML(Y)
Intensity III: Monticello.

13 April (Y) Central South Carolina
Origin time: 09 25 20.1
Epicenter: 34.31 N., 81.33 W.
Depth: 2 km
Magnitude: 2.7Mn(G), 2.8ML(Y)
Intensity III: Jenkinsville, Little Mountain.

14 April (Y) Central South Carolina
Origin time: 05 29 35.4
Epicenter: 34.31 N., 81.34 W.
Depth: 2 km
Magnitude: 2.6ML(Y)

Felt in the Monticello Reservoir area (Y).

7 May (Y) Northwestern South Carolina
Origin time: 07 37 53.8
Epicenter: 34.43 N., 81.40 W.
Depth: 0 km
Magnitude: 2.1ML(Y)

Largest of seven earthquakes occurring between 0731 and 0740 UTC. (Y)

SOUTH CAROLINA--Continued

Intensity III: Near the epicenter.

16 July (Y) Northwestern South Carolina
Origin time: 14 16 02.9
Epicenter: 34.32 N., 81.55 W.
Depth: 2 km
Magnitude: 3.1MD(K), 2.3ML(Y)
Intensity III: Keitts Crossroads and St. Phillips areas of Newberry County.

12 August Northwestern South Carolina
Origin time: 18 30
Epicenter: Not located
Depth: None computed
Magnitude: 2.0Mn(Y)
Intensity III: Newberry (press report).

SOUTH DAKOTA

11 July (G) Eastern South Dakota
Origin time: 19 42 28.4
Epicenter: 44.01 N., 96.72 W.
Depth: 5 km
Magnitude: 3.6Mn(T)
Intensity V:
South Dakota--
Brandon--a few small objects were overturned and fell, hanging pictures were swung out of place, buildings shook strongly, felt by all and frightened many.
Chester--a few items were thrown from store shelves, buildings shook strongly, felt by all and frightened many.
Renner--a few windows were cracked, vibration was described as "strong," felt by many.
Sherman--some glassware was broken, a few small objects were overturned and fell, trees and bushes were slightly shaken.
Intensity IV:
Iowa--Brunsville, George.
Minnesota--Chandler, Hills, Luverne, Pipestone.
South Dakota--Colman, Colton, Corson, Flandreau, Garretson, Lyons, Nunda, Rutland, Trent, Ward, Wentworth.
Intensity III:
Iowa--Matlock, Sioux Center.
Minnesota--Beaver Creek, Clarkfield, Edgerton, Holland, Rushmore, Verdi.
South Dakota--Baltic (press report), Dell Rapids (press report), Egan, Elkton, Humboldt, Jasper, Lennox, Madison, Ramona, Sinai, Sioux Falls (press report), Valley Springs, Volga.

15 November (G) Southeastern South Dakota
Origin time: 02 58 22.9
Epicenter: 43.01 N., 97.85 W.

SOUTH DAKOTA--Continued

Depth: 5 km
Magnitude: 4.3Mn(T), 4.3Mn(G)

This earthquake was felt over an area of approximately 19,700 km^2 of northeastern Nebraska, southeastern South Dakota, and western Iowa (fig. 20).

The most common report by people in the affected area was a description of the earthquake sound; they thought their furnaces had exploded.

Intensity V:
Nebraska--
Center--hairline cracks in plaster, stucco, and drywall interior walls; few windows were cracked; few items were thrown from store shelves; few small objects were overturned and fell; few glassware or dishes were broken.
Coleridge--few small objects fell.
Crofton--few items were thrown from store shelves, few windows were cracked, few small objects were overturned and fell, few glassware or dishes were broken.
Fordyce--hairline cracks in plaster walls, felt by many.
Haskins--few small objects were overturned and fell.
Niobrara--few items were thrown from store shelves, few small objects were overturned and fell, few glassware or dishes were broken, hanging pictures were swung out of place, felt by all.
Ponca--few small objects fell, felt by many.
Wakefield--few small objects were overturned and fell, few glassware or dishes were broken.
South Dakota--
Gayville--few glassware or dishes were broken, felt by many.
Mission Hill--few items were thrown from store shelves, few small objects were overturned and fell, hairline cracks in plaster or stucco interior walls, one foundation was reported cracked.
Scotland--few windows were cracked, few small objects were overturned and fell, felt by all.
Tabor--few small objects fell, hanging pictures were swung out of place, felt by all.
Tripp--few small objects were overturned and fell, hanging pictures were swung out of place.
Yankton--hairline cracks in plaster, stucco or drywall interior walls; few windows were cracked; hanging pictures were swung.

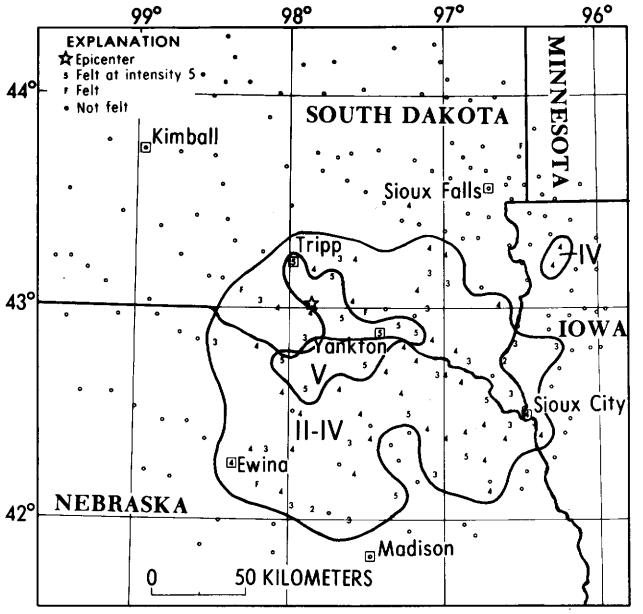

Figure 20. Isoseismal map for the southeastern South Dakota earthquake of 15 November 1982, 02 58 22.9 UTC. Roman numerals represent Modified Mercalli intensities between isoseismals; Arabic numerals are used to represent these intensities at specific sites.

SOUTH DAKOTA--Continued

Intensity IV:
Iowa--Doon, Rock Valley, Sergeant Bluff, Sioux City.
Nebraska--Allen, Bloomfield, Brunswick, Concord, Creighton, Emerson, Ewing, Hartington, Hubbard, Laurel, Maskell, McLean, Neligh, Newcastle (hanging pictures were swung out of place), Orchard, Pender (few small objects fell), Pierce, Saint Helena, Verdel, Verdigre, Waterbury, Wausa, Wynot.
South Dakota--Alcester, Avon, Davis, Hurley, Irene, Kaylor, Lesterville, Lindy (press report), Meckling, Menno, Monroe, Tyndall, Vermillion.

Intensity III:
Iowa--Akron, Brunsville.
Nebraska--Battle Creek, Jackson, Lynch, Oakdale, Obert, Osmond, Royal, South Sioux City, Wayne, Yerdel.
South Dakota--Burbank, Centerville, Dante, Jefferson, Olivet, Springfield, Viborg, Wakonda.

Intensity II:
Iowa--Westfield.
Nebraska--Tilden.
Felt:
Nebraska--Clearwater.
South Dakota--Sherman, Utica (press report), Wagner (press report).

TENNESSEE

2 January (K) Central Tennessee
Origin time: 02 00 26.2
Epicenter: 35.18 N., 86.43 W.
Depth: 13 km
Magnitude: 2.9Mn(G), 3.1MD(K), 3.4ML(F)

Felt in Bedford, Coffee, Franklin, Lincoln, Marshall, and Moore Counties (press report).

Intensity V: Lynchburg (broken windows and dishes).
Intensity IV: Fayetteville, Flintville, Huntland, Mulberry, and Pleasant Grove.
Intensity III: Lewisburg.

17 April (K) Western Tennessee
Origin time: 01 22 54.9
Epicenter: 35.91 N., 89.06 W.
Depth: 5 km
Magnitude: 2.8Mn(G), 2.8MD(K)
Intensity IV: Dyer (press report).

1 May (K) Western Tennessee
Origin time: 13 05 26.7
Epicenter: 35.73 N., 89.70 W.
Depth: 5 km
Magnitude: 2.8MD(K)

Felt at Garland (K).

6 May (K) Western Tennessee
Origin time: 02 56 08.3
Epicenter: 36.33 N., 89.47 W.
Depth: 6 km
Magnitude: 1.2MD(K)

Felt at Ridgely (K).

2 June (K) Western Tennessee
Origin time: 11 55 45.4
Epicenter: 36.46 N., 89.54 W.
Depth: 1 km
Magnitude: 2.6MD(K)

Felt at Ridgely (K).

14 July (K) Western Tennessee
Origin time: 16 01 35.6
Epicenter: 36.26 N., 89.45 W.
Depth: 4 km
Magnitude: 2.4MD(K)

Felt in the Ridgely area (K).

5 September (K) Eastern Tennessee
Origin time: 10 11 09.4
Epicenter: 35.19 N., 84.51 W.
Depth: 13 km
Magnitude: 3.2MD(K), 2.8Mn(G)
Intensity IV: Benton, Delano, Reliance.
Intensity III: Etowah.

24 September (K) Eastern Tennessee
Origin time: 21 57 42.5

Epicenter: 35.68 N., 84.24 W.
Depth: 13 km
Magnitude: 3.0Mn(V), 3.4MD(K), 3.0Mn(S)
Intensity V:
Tennessee--
Alcoa--a few dishes were broken and a few small objects fell.
Knoxville--a few windows were cracked, some glassware was broken, and a few small objects were overturned or fell.
Mount Vernon--a few small objects were overturned, felt by all.
Tallassee--some glassware was broken, a few small objects were overturned or fell, well water was muddied.
Intensity IV:
North Carolina--Fontana Dam.
Tennessee--Clarkrange, Friendsville, Greenback, Grimsley, Lenoir City, Loudon, Madisonville, Seymour, Sweetwater, Tellico Plains, Ten Mile, Vonore.
Intensity III:
Georgia--McCaysville.
North Carolina--Hayesville.
Tennessee--Etowah, Turtletown.
Intensity II:
Georgia--Crandall.
Tennessee--Ducktown, Jefferson City, Monterey, Petros.
Felt:
Tennessee--Concord, Townsend.

24 September (K) Eastern Tennessee
Origin time: 22 19 16.9
Epicenter: 35.68 N., 84.25 W.
Depth: 8 km
Magnitude: 3.4Mn(V), 3.5MD(K), 3.2Mn(S)
Intensity IV:
North Carolina--Fontana Dam.
Tennessee--Alcoa, Delano, Friendsville, Loudon, Lenoir City, Madisonville, Maryville, Mount Vernon, Reliance, Sweetwater, Tellico Plains, Ten Mile, Vonore.
Intensity III:
Georgia--Cherry Log, McCaysville.
Tennessee--Etowah, Knoxville.
Intensity II:
Georgia--Crandall.
Tennessee-Ducktown.
Felt:
Tennesse--Greenback (S).

29 September (K) Northwestern Tennessee
Origin time: 02 05 56.3
Epicenter: 36.24 N., 89.42 W.
Depth: 9 km
Magnitude: 2.0MD(K)

Felt in the Ridgely area (K).

29 September (K) Northwestern Tennessee
Origin time: 02 06 28.0
Epicenter: 36.26 N., 89.43 W.
Depth: 7 km

TENNESSEE--Continued

Magnitude: 2.8MD(K), 2.1Mn(S)
Intensity IV: Ridgely area (K).

17 October (K) Northwestern Tennessee
Origin time: 19 53 43.0
Epicenter: 36.24 N., 89.42 W.
Depth: 5 km
Magnitude: 2.6MD(K), 2.6Mn(S)
Intensity III: Ridgely (K).

18 December (K) Northwestern Tennesse
Origin time: 03 42 46.7
Epicenter: 36.43 N., 89.51 W.
Depth: 5 km
Magnitude: 2.0MD(K)

Felt in the Ridgely area (K).

TEXAS

4 January (G) Southwestern Texas
Origin time: 16 56 08.1
Epicenter: 31.18 N., 102.49 W.
Depth: 5 km
Magnitude: 3.9Mn(T)
Intensity III: Fort Stockton.

14 October (G) Texas Panhandle
Origin time: 12 52 46.3
Epicenter: 36.10 N., 102.57 W.
Depth: 5 km
Magnitude: 3.9Mn(G), 3.8Mn(T)

The earthquake was described as "just like a sonic boom" and "rumbled like a big train was coming through."

Intensity IV:
Texas--Hartley.
Intensity III:
New Mexico--Amistad, Sedan (hanging pictures were swung).
Intensity II:
Texas--Dalhart, Texline.

28 November (G) Western Texas
Origin time: 02 36 48.5
Epicenter: 33.00 N., 100.84 W.
Depth: 5 km
Magnitude: 3.3Mn(T)
Intensity IV: Synder.
Intensity III: O'Donnell.
Intensity II: Dermott.

UTAH

12 February (U) Southern Utah
Origin time: 10 44 12.7
Epicenter: 37.41 N., 112.57 W.
Depth: 2 km

Magnitude: 3.2ML(U)
Intensity IV: Glendale (press report).

5 March (U) Southern Utah
Origin time: 05 50 22.9
Epicenter: 37.37 N., 112.61 W.
Depth: 2 km
Magnitude: 3.6ML(G), 3.3ML(U)
Intensity IV:
Utah--Glendale, Kanab.
Intensity III:
Arizona--Fredonia.

24 May (U) Southwestern Utah
Origin time: 12 13 26.6
Epicenter: 38.71 N., 112.04 W.
Depth: 5 km
Magnitude: 4.7mb(G), 4.0ML(U)

This earthquake was felt principally in the Sevier Valley between Aurora, 16 miles northeast of the epicenter, and Joseph, 11 miles southwest of the epicenter. A field investigation conducted by Bruce N. Kaliser of the Utah Geological and Mineral Survey indicated minor building damage was observed in Annabella, Central, Elsinore, Glenwood, Monroe, and Sigurd. The bulk of the building damage was in Annabella, Elsinore, and Monroe. This was the strongest earthquake to occur in this area since the one on October 4, 1967.

Intensity VI:
Anabella--bricks fell from several fireplace chimneys (press report), hanging pictures fell, many small objects were overturned and fell, many glassware and dishes were broken, heavy and light furniture or appliances were overturned, stone or brick fences fell or exhibited open cracks. A double-car garage roof was shifted 1 inch to the north, the south and west walls were cracked and bowed outward in the upper half, window separation in the north wall was about 1-1/2 inches (press report). In many homes, television appliances and stereo units were turned on and required unplugging to turn units off (press report).
Central--objects on shelves were tipped over (press report).
Elsinore--interior wall was separated from ceiling or floor, few merchandise items were thrown from store shelves, few small objects were overturned and fell, few glassware and dishes were broken.
Glenwood--chimney bricks fell, hairline cracks in plaster or stucco interior walls, light furniture or small appliances were overturned, few small objects were overturned and fell, hanging pictures were swung out of place.

Monroe--several windows were broken (press report), three water lines leaked (press report), few small objects were overturned.
Sigurd--objects on shelves were tipped over, a person in a field leaning over an irrigation line was pitched to the ground (press report).
Intensity V:
Koosharem--few windows were cracked, few small objects were overturned and fell, few glassware and dishes were broken, hairline cracks in plaster or stucco interior walls.
Intensity IV: Aurora, Manti, Richfield.
Intensity III: Greenwich, Mayfield.
Intensity II: Cedar City.
Felt: Joseph and Salt Lake City (all press reports).

14 October (U) Southern Idaho
Origin time: 04 10 24.3

See Idaho listing.

24 December (G) Southeastern Idaho
Origin time: 15 11 20.1

See Idaho listing.

VERMONT

9 January (G) New Brunswick, Canada
Origin time: 12 53 51.9

See Maine listing.

11 January (G) New Brunswick, Canada
Origin time: 21 41 08.0

See Maine listing.

19 January (J) Central New Hampshire
Origin time: 00 14 42.7

See New Hampshire listing.

31 March (O) New Brunswick, Canada
Origin time: 21 02 20.0

See Maine listing.

1 December (J) Central New Hampshire
Origin time: 22 52 22.9

See New Hampshire listing.

VIRGINIA

6 May (V) Eastern Virginia
Origin time: 07 18 10.9

VIRGINIA--Continued

Epicenter: 37.85 N., 77.58 W.
Depth: 10 km
Magnitude: 2.0MD(V)
Intensity II: Montpelier.

16 June (V) Central Virginia
Origin time: 18 40 58.6
Epicenter: 38.13 N., 78.84 W.
Depth: 11 km
Magnitude: 2.1MD(V)
Intensity II: Fishersville.

WASHINGTON

21 January (W) Northwestern Washington
Origin time: 16 05 45.3
Epicenter: 48.47 N., 121.70 W.
Depth: 0 km
Magnitude: 2.5ML(G)

Felt at Van Horn (W).

21 January (W) Northwestern Washington
Origin time: 17 12 57.5
Epicenter: 48.48 N., 121.71 W.
Depth: 2 km
Magnitude: 2.0ML(G)

Felt at Van Horn (W).

30 January (W) Northwestern Washington
Origin time: 02 37 54.3
Epicenter: 48.78 N., 122.70 W.
Depth: 18 km
Magnitude: 2.9ML(G)

Felt in the San Juan Islands.

1 March (W) Mount St. Helens area
Origin time: 17 40 04.5
Epicenter: 46.35 N., 122.25 W.
Depth: 12 km
Magnitude: 4.1mb(G), 4.1ML(G)

Felt in the Elk Lake area.

Intensity V:
Washington--
Glenoma--few small objects overturned, felt by all.
Silver Creek--few merchandise items were thrown from store shelves, few small objects overturned and fell, person had difficulty in walking, felt by many.
Intensity IV:
Washington--Ashford, Eatonville, Elbe, La Center, La Grande, Longmire, Littlerock, Mineral, Packwood, Randle, Salkum, Silverlake, Vader, Yacolt.
Intensity III:
Oregon--Bridal Veil, Clatskanie, Saint Helens, Westport.

WASHINGTON--Continued

Washington--Adna, Cathlamet, Cougar, Mossyrock, Naselle, Skamokawa, Snoqualmie, Toledo, Wauna.
Intensity II:
Washington--Amboy, Castle Rock, Dockton, Orting, Ryderwood, Tokeland, Vashon, Winlock, Woodland.
Felt:
Washington--Federal Way, Kelso, Longview (all press reports).

14 April (W) Puget Sound area
Origin time: 07 22 43.4
Epicenter: 47.65 N., 122.52 W.
Depth: 26 km
Magnitude: 3.1ML(G)
Intensity IV: Bainbridge Island (press report), Ballard (press report), Bremerton, Magnolia (press report), North Kitsap, Olalla, Port Gamble, Port Orchard, Seattle, South Kitsap (press report).
Intensity III: Dockton, Quilcene, Wauna.
Intensity II: Monroe.
Felt: Lake City, Port Angeles (all press reports), Queen Anne.

31 May (W) Mount St. Helens area
Origin time: 05 10 40.9
Epicenter: 46.35 N., 122.23 W.
Depth: 11 km
Magnitude: 2.7MD(W)

Felt at Glenoma and Randle (W).

4 June (W) Puget Sound area
Origin time: 07 44 55.8
Epicenter: 47.71 N., 122.09 W.
Depth: 7 km
Magnitude: 2.9MD(W), 2.5ML(G)
Intensity IV: Kirkland, Redmond, Woodenville (all press reports).

4 June (W) Puget Sound area
Origin time: 16 10 34.1
Epicenter: 47.71 N., 122.12 W.
Depth: 6 km
Magnitude: 3.1MD(W), 2.6ML(G)
Intensity IV: Bothell and Redmond (press reports).

15 July (W) Central Washington
Origin time: 03 02 07.5
Epicenter: 47.25 N., 119.95 W.
Depth: 1 km
Magnitude: 2.4MD(W)
Intensity III: Quincy (W).

15 September (W) Puget Sound area
Origin time: 17 32 33.2
Epicenter: 47.69 N., 122.03 W.
Depth: 7 km
Magnitude: 2.9MD(W)
Intensity IV: Duvall (W).

WASHINGTON--Continued

26 September (W) Central Washington
Origin time: 10 09 23.9
Epicenter: 46.87 N., 121.07 W.
Depth: 4 km
Magnitude: 2.9ML(G), 3.4MD(W)

Felt in the Naches area (W).

21 November (G) Northwestern Oregon
Origin time: 04 57 32.8

See Oregon listing.

WYOMING

1 March (G) Southwestern Wyoming
Origin time: 10 43 06.2
Epicenter: 42.99 N., 111.04 W.
Depth: 5 km
Magnitude: 3.6ML(G)
Intensity V:
Wyoming--Freedom (few small objects fell, a report of stone fences fallen, felt by several).
Intensity IV:
Wyoming--Etna, Thayne.
Intensity III:
Idaho--Palisades.

10 July (G) Yellowstone National Park
Origin time: 01 19 54.8
Epicenter: 44.19 N., 110.90 W.
Depth: 5 km
Magnitude: 3.0ML(G)
Intensity III: Grant Village, Old Faithful.

31 August (G) Central Wyoming
Origin time: 22 02 18.5
Epicenter: 42.72 N., 108.85 W.
Depth: 5 km
Magnitude: 3.2ML(G)

The effects at Ethete were reported as sounding like a sonic boom, only louder and longer, with no accompanying vibration.

WYOMING--Continued

Intensity IV: Lander.

30 September (G) Eastern Idaho
Origin time: 02 27 19.8

See Idaho listing.

1 October (G) Yellowstone National Park
Origin time: 22 55 29.6
Epicenter: 44.33 N., 110.85 W.
Depth: 5 km
Magnitude: 3.0ML(G)
Intensity IV: Old Faithful.

7 October (G) Southeastern Idaho
Origin time: 09 26 02.6

See Idaho listing.

8 October (U) Southeastern Idaho
Origin time: 09 53 32.1

See Idaho listing.

14 October (U) Southeastern Idaho
Origin time: 04 10 24.3

See Idaho listing.

8 November (G) Yellowstone National Park
Origin time: 01 18 29.3
Epicenter: 44.78 N., 110.92 W.
Depth: 5 km
Magnitude: 3.2ML(G), 3.6MD(D)
Intensity III: Madison Junction.

10 November (D) Yellowstone National Park
Origin time: 03 40 41.1
Epicenter: 44.48 N., 110.63 W.
Depth: 0 km
Magnitude: 3.4MD(D)
Intensity IV: Grant Village.

Table 1. *Summary of U. S. earthquakes for 1982*

[The following symbols are used to indicate authority for arrival or origin times, epicenters, and/or magnitudes: (A) University of Alaska, College; (B) University of California, Berkeley; (C) Kansas Geological Survey, Lawrence; (D) Los Alamos National Laboratory, Los Alamos, New Mexico; (E) U.S. Department of Energy, Las Vegas, Nevada; (F) Georgia Institute of Technology; (G) U.S. Geological Survey, Golden, Colorado, or Menlo Park, California; (H) U.S. Geological Survey, Hawaiian Volcano Observatory; (I) University of Kentucky, Lexington; (J) Weston Observatory, Massachusetts; (K) Tennessee Earthquake Information Center, Memphis; (L) Lamont-Doherty Geological Observatory, Palisades, N.Y.; (M) NOAA, Alaska Tsunami Warning Center, Palmer; (P) California Institute of Technology, Pasadena; (Q) Pacific Geoscience Centre; Sidney, B.C., Canada; (S) St. Louis University, St. Louis, Missouri; (T) Oklahoma Geological Survey, Leonard; (U) University of Utah, Salt Lake; (V) Virginia Polytechnic Institute and State University, Blacksburg; (W) University of Washington, Seattle; (X) Pennsylvania State University, University Park; (Y) University of South Carolina, Columbia; (Z) University of Texas, Austin. N, Normal depth. Leaders (...) indicate information is not available]

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
ALABAMA													
FEB. 5	10	59	06.9	32.68 N.	86.62 W.	0	...	...	2.5F	...	F	FEB. 5	04 A.M. CST
ALASKA													
JAN. 1	02	35	26.0	64.00 N.	149.00 W.	33N	...	...	3.0M	...	G	DEC. 31	04 P.M. AST
JAN. 2	03	59	42.5	59.84 N.	153.45 W.	137	...	...	...	...	G	JAN. 1	05 P.M. AST
JAN. 2	12	07	38.2	61.34 N.	149.08 W.	50	...	...	3.0M	...	G	JAN. 2	02 A.M. AST
JAN. 2	20	27	16.3	55.65 N.	157.73 W.	33N	4.4	...	4.3M	...	G	JAN. 2	10 A.M. AST
JAN. 3	18	06	26.0	62.86 N.	150.63 W.	123	...	...	...	...	G	JAN. 3	08 A.M. AST
JAN. 3	22	36	03.6	64.06 N.	149.86 W.	33N	...	...	3.2M	...	G	JAN. 3	12 P.M. AST
JAN. 4	00	40	00.2	50.79 N.	173.45 W.	33N	4.8	...	...	...	G	JAN. 3	01 P.M. BST
JAN. 4	01	24	50.3	62.47 N.	151.01 W.	100	...	...	...	...	G	JAN. 3	03 P.M. AST
JAN. 4	23	37	30.6	51.41 N.	178.32 W.	60	4.7	...	...	...	G	JAN. 4	12 P.M. BST
JAN. 6	12	23	40.0	51.50 N.	176.59 W.	53	5.0	...	4.3M	II	G	JAN. 6	01 A.M. BST
JAN. 8	12	00	17.0	61.34 N.	147.03 W.	64	...	...	...	...	G	JAN. 8	02 A.M. AST
JAN. 8	13	03	52.1	62.90 N.	150.66 W.	121	3.9	...	...	...	G	JAN. 8	03 A.M. AST
JAN. 9	07	50	42.1	58.36 N.	155.69 W.	211	...	...	...	...	G	JAN. 8	09 P.M. AST
JAN. 10	13	15	42.6	65.86 N.	155.29 W.	21	...	...	3.7M	...	G	JAN. 10	03 A.M. AST
JAN. 11	21	08	36.2	63.03 N.	150.14 W.	98	...	...	...	...	G	JAN. 11	11 A.M. AST
JAN. 12	15	22	55.2	59.07 N.	152.26 W.	68	4.8	...	...	IV	G	JAN. 12	05 A.M. AST
JAN. 16	03	37	54.5	51.67 N.	176.44 E.	48	4.6	...	4.5M	...	G	JAN. 15	04 P.M. BST
JAN. 16	15	58	53.3	51.39 N.	178.27 W.	55	4.6	...	...	...	G	JAN. 16	04 A.M. BST
JAN. 17	19	58	40.7	51.73 N.	173.77 W.	51	4.4	...	4.1M	...	G	JAN. 17	08 A.M. BST
JAN. 18	22	36	44.7	53.93 N.	165.66 W.	66	4.6	...	...	...	G	JAN. 18	11 A.M. BST
JAN. 19	17	47	31.4	60.11 N.	152.65 W.	124	4.3	...	...	...	G	JAN. 19	07 A.M. AST
JAN. 19	22	20	23.0	63.58 N.	147.81 W.	22	...	...	3.4M	...	G	JAN. 19	12 P.M. AST
JAN. 22	09	00	40.5	55.82 N.	158.97 W.	81	4.4	...	...	...	L	JAN. 21	11 P.M. AST
JAN. 23	00	28	35.0	61.70 N.	149.78 W.	57	...	...	...	...	G	JAN. 22	02 P.M. AST
JAN. 23	18	20	24.8	62.30 N.	151.19 W.	81	...	...	...	...	G	JAN. 23	08 A.M. AST
JAN. 23	20	56	02.1	59.45 N.	152.27 W.	127	...	...	...	...	G	JAN. 23	10 A.M. AST
JAN. 25	00	50	04.5	60.19 N.	153.08 W.	119	3.9	...	...	...	G	JAN. 24	02 P.M. AST
JAN. 25	01	32	15.1	63.12 N.	150.77 W.	112	...	...	...	...	G	JAN. 24	03 P.M. AST
JAN. 25	05	29	33.5	53.22 N.	165.72 W.	60	6.1	...	6.1L	IV	G	JAN. 24	06 P.M. BST
JAN. 25	23	39	17.7	56.39 N.	155.86 W.	15	...	...	4.1L	...	L	JAN. 25	01 P.M. AST
JAN. 29	14	02	57.6	53.79 N.	164.85 W.	33N	4.7	...	4.2M	...	G	JAN. 29	03 A.M. BST
JAN. 29	21	03	36.5	59.51 N.	153.36 W.	130	...	...	...	...	G	JAN. 29	11 A.M. AST
JAN. 30	10	24	18.0	57.55 N.	155.59 W.	33N	...	...	3.7M	...	G	JAN. 30	00 A.M. AST
JAN. 31	04	24	37.1	51.42 N.	178.15 E.	68	4.5	...	...	...	G	JAN. 30	05 P.M. BST
JAN. 31	05	54	21.8	56.96 N.	153.30 W.	33N	4.6	...	4.3M	...	G	JAN. 30	07 P.M. AST
JAN. 31	11	23	33.1	59.06 N.	153.84 W.	100	4.3	...	4.3L	...	G	JAN. 31	01 A.M. AST
FEB. 1	05	21	40.5	51.59 N.	178.03 W.	29	4.6	...	...	...	G	JAN. 31	06 P.M. BST
FEB. 1	17	19	08.1	67.81 N.	161.98 W.	15	...	...	3.3M	...	G	FEB. 1	06 A.M. BST
FEB. 2	11	30	12.4	61.36 N.	147.59 W.	33N	...	...	3.0M	...	G	FEB. 2	01 A.M. AST
FEB. 3	10	42	56.5	61.63 N.	149.69 W.	41	...	...	3.4M	III	G	FEB. 3	00 A.M. AST
FEB. 3	16	25	09.6	61.82 N.	148.97 W.	30	...	...	2.7M	II	G	FEB. 3	06 A.M. AST
FEB. 4	00	04	58.4	51.30 N.	179.30 E.	53	4.5	...	...	...	G	FEB. 3	01 P.M. BST
FEB. 4	11	15	59.1	59.08 N.	152.51 W.	72	4.2	...	...	...	G	FEB. 4	01 A.M. AST
FEB. 6	01	43	12.5	51.05 N.	179.35 E.	33N	4.5	...	...	...	G	FEB. 5	02 P.M. BST
FEB. 6	11	50	48.4	59.91 N.	152.70 W.	127	...	...	...	...	G	FEB. 6	01 A.M. AST
FEB. 7	06	07	13.2	51.78 N.	176.87 W.	60	5.3	...	...	FELT	G	FEB. 6	07 P.M. BST
FEB. 7	09	28	57.5	51.14 N.	178.99 E.	43	5.1	4.4	5.6M	...	G	FEB. 6	10 P.M. BST
FEB. 7	23	38	32.1	61.20 N.	150.52 W.	50	...	...	3.3M	...	G	FEB. 7	01 P.M. AST
FEB. 9	17	54	15.0	59.02 N.	141.93 W.	15	4.2	...	3.8M	...	G	FEB. 9	07 A.M. AST
FEB. 13	12	21	19.5	62.98 N.	151.14 W.	144	...	...	...	...	G	FEB. 13	02 A.M. AST
FEB. 14	05	29	20.1	61.91 N.	148.66 W.	74	...	...	...	...	G	FEB. 13	07 P.M. AST
FEB. 15	06	07	39.1	59.83 N.	151.27 W.	102	...	...	...	...	G	FEB. 14	08 P.M. AST
FEB. 16	18	02	01.2	54.18 N.	156.35 W.	36	4.7	...	4.2L	...	L	FEB. 16	08 A.M. AST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
ALASKA--Continued													
FEB. 17	22	31	15.2	51.63 N.	177.71 E.	65	4.7	...	...	...	G	FEB. 17	11 A.M. BST
FEB. 18	20	37	10.3	63.31 N.	151.57 W.	17	...	...	4.1M	...	G	FEB. 18	10 A.M. AST
FEB. 19	02	29	31.0	62.56 N.	149.35 W.	89	3.7	...	...	...	G	FEB. 18	04 P.M. AST
FEB. 19	02	50	53.5	53.62 N.	164.48 W.	32	4.6	...	4.5L	...	L	FEB. 18	03 P.M. BST
FEB. 19	11	41	35.7	51.53 N.	167.95 W.	16	...	...	4.0L	...	L	FEB. 19	00 A.M. BST
FEB. 19	18	57	50.8	59.80 N.	152.76 W.	114	3.9	...	...	...	G	FEB. 19	08 A.M. AST
FEB. 20	06	18	00.8	60.74 N.	146.93 W.	95	...	...	...	...	G	FEB. 19	08 P.M. AST
FEB. 21	15	17	14.8	67.11 N.	158.03 W.	33N	...	...	3.5M	...	G	FEB. 21	05 A.M. AST
FEB. 25	17	59	49.5	60.47 N.	151.90 W.	103	...	...	...	...	G	FEB. 25	07 A.M. AST
FEB. 25	18	07	25.2	60.48 N.	151.88 W.	99	3.9	...	...	...	G	FEB. 25	08 A.M. AST
FEB. 25	21	54	44.7	61.85 N.	154.37 W.	25	...	...	3.6M	...	G	FEB. 25	11 A.M. AST
FEB. 26	07	16	58.0	60.15 N.	153.06 W.	125	4.9	...	...	IV	G	FEB. 25	09 P.M. AST
FEB. 27	12	18	07.1	62.34 N.	147.92 W.	71	5.0	...	...	III	G	FEB. 27	02 A.M. AST
FEB. 27	13	07	10.5	64.87 N.	147.29 W.	21	...	...	3.0M	III	G	FEB. 27	03 A.M. AST
FEB. 28	06	57	30.8	59.79 N.	152.97 W.	91	4.4	...	...	...	G	FEB. 27	08 P.M. AST
FEB. 28	08	55	43.6	51.56 N.	178.32 W.	55	5.2	...	5.1L	...	G	FEB. 27	09 P.M. BST
FEB. 28	09	28	27.8	63.22 N.	150.54 W.	147	...	...	...	...	G	FEB. 27	11 P.M. AST
MAR. 3	08	04	42.8	58.29 N.	154.41 W.	33N	4.0	...	3.1M	...	G	MAR. 2	10 P.M. AST
MAR. 5	04	05	24.6	49.99 N.	158.52 W.	30	...	...	4.5L	...	L	MAR. 4	06 P.M. AST
MAR. 5	14	55	27.6	60.12 N.	153.12 W.	159	4.2	...	...	...	G	MAR. 5	04 A.M. AST
MAR. 6	00	11	15.4	60.36 N.	151.03 W.	32	...	...	3.7M	...	G	MAR. 5	02 P.M. AST
MAR. 6	08	15	45.7	60.51 N.	152.00 W.	88	...	...	...	...	G	MAR. 5	10 P.M. AST
MAR. 7	03	08	03.7	62.86 N.	150.89 W.	122	...	...	...	...	G	MAR. 6	05 P.M. AST
MAR. 7	07	20	36.8	66.39 N.	157.63 W.	33N	3.7	...	3.8M	...	G	MAR. 6	09 P.M. AST
MAR. 7	15	28	55.4	62.25 N.	151.26 W.	114	...	...	...	...	G	MAR. 7	05 A.M. AST
MAR. 8	13	34	29.1	61.01 N.	152.58 W.	153	...	...	...	...	G	MAR. 8	03 A.M. AST
MAR. 9	16	25	18.6	60.15 N.	152.94 W.	127	4.4	...	...	II	G	MAR. 9	06 A.M. AST
MAR. 10	10	07	34.5	61.39 N.	150.39 W.	25	...	...	3.1M	...	G	MAR. 10	00 A.M. AST
MAR. 11	03	31	57.7	63.11 N.	148.51 W.	103	...	...	...	...	G	MAR. 10	05 P.M. AST
MAR. 11	03	34	07.6	60.87 N.	147.00 W.	33N	...	...	3.1M	...	G	MAR. 10	05 P.M. AST
MAR. 13	00	54	02.4	63.52 N.	151.16 W.	33N	...	...	3.3M	...	G	MAR. 12	02 P.M. AST
MAR. 15	14	53	15.4	52.82 N.	162.19 W.	33N	5.0	4.3	4.6M	...	G	MAR. 15	03 A.M. BST
MAR. 17	13	17	59.0	64.15 N.	150.47 W.	33N	...	...	3.2M	...	G	MAR. 17	03 A.M. AST
MAR. 18	06	13	53.4	51.53 N.	178.66 E.	43	4.5	...	4.4M	...	G	MAR. 17	07 P.M. BST
MAR. 18	14	19	23.8	60.07 N.	152.76 W.	127	...	...	...	...	G	MAR. 18	04 A.M. AST
MAR. 18	18	05	11.8	64.98 N.	149.18 W.	16	...	...	3.2M	...	G	MAR. 18	08 A.M. AST
MAR. 19	20	53	27.0	52.46 N.	171.22 W.	33N	4.7	...	...	...	G	MAR. 19	09 A.M. BST
MAR. 20	08	09	04.3	56.66 N.	152.21 W.	33N	...	...	3.0M	...	G	MAR. 19	10 P.M. AST
MAR. 20	18	21	45.2	63.24 N.	150.70 W.	150	...	...	...	...	G	MAR. 20	08 A.M. AST
MAR. 21	08	43	01.4	61.97 N.	151.32 W.	83	4.4	...	...	...	G	MAR. 20	10 P.M. AST
MAR. 22	06	42	22.4	59.87 N.	150.54 W.	88	...	...	...	...	G	MAR. 21	08 P.M. AST
MAR. 23	09	00	19.3	63.14 N.	150.86 W.	140	...	...	...	...	G	MAR. 22	11 P.M. AST
MAR. 23	18	30	41.3	49.83 N.	178.88 W.	33N	4.4	...	...	...	G	MAR. 23	07 A.M. BST
MAR. 25	04	50	38.7	64.12 N.	150.06 W.	14	...	...	3.6M	...	G	MAR. 24	06 P.M. AST
MAR. 30	03	44	23.0	64.96 N.	145.21 W.	10	...	...	4.1M	IV	G	MAR. 29	05 P.M. AST
MAR. 31	11	24	15.8	59.30 N.	152.22 W.	82	...	...	...	...	G	MAR. 31	01 A.M. AST
APR. 1	01	37	39.8	58.68 N.	151.00 W.	33N	3.9	...	3.7M	...	G	MAR. 31	03 P.M. AST
APR. 1	08	52	13.2	61.70 N.	147.40 W.	55	...	...	3.0M	...	G	MAR. 31	10 P.M. AST
APR. 4	23	40	07.5	52.88 N.	171.34 W.	101	4.3	...	...	...	G	APR. 4	12 P.M. BST
APR. 5	19	31	16.0	50.95 N.	177.84 W.	33N	4.3	...	...	...	G	APR. 5	08 A.M. BST
APR. 7	00	27	21.5	51.46 N.	176.20 W.	53	4.4	...	...	...	G	APR. 6	01 P.M. BST
APR. 9	23	24	58.6	63.94 N.	148.82 W.	10	...	...	2.9M	...	G	APR. 9	01 P.M. AST
APR. 11	04	10	32.1	52.09 N.	170.34 E.	33N	4.5	...	...	...	G	APR. 10	05 P.M. BST
APR. 11	15	03	27.8	62.19 N.	148.81 W.	79	...	...	...	II	G	APR. 11	05 A.M. AST
APR. 15	13	17	37.5	63.83 N.	149.65 W.	156	...	...	...	...	G	APR. 15	03 A.M. AST
APR. 15	16	21	14.7	54.18 N.	161.47 W.	23	5.3	...	4.8L	IV	L	APR. 15	05 A.M. BST
APR. 16	08	46	56.6	53.74 N.	163.43 W.	33N	4.2	...	...	...	G	APR. 15	09 P.M. BST
APR. 16	08	49	32.1	53.73 N.	163.33 W.	33N	4.5	...	...	...	G	APR. 15	09 P.M. BST
APR. 16	11	31	47.8	61.27 N.	149.48 W.	52	...	...	3.4M	IV	G	APR. 16	01 A.M. AST
APR. 16	19	15	49.9	59.25 N.	153.49 W.	161	...	...	...	...	G	APR. 16	09 A.M. AST
APR. 17	06	10	53.1	60.00 N.	153.39 W.	150	3.9	...	...	...	G	APR. 16	08 P.M. AST
APR. 17	16	38	08.7	60.29 N.	139.69 W.	15	3.7	...	3.9M	...	G	APR. 17	07 A.M. YST
APR. 17	17	06	46.6	60.16 N.	139.44 W.	15	4.0	...	4.4M	...	G	APR. 17	08 A.M. YST
APR. 17	18	17	25.3	59.35 N.	151.96 W.	87	...	...	...	...	G	APR. 17	08 A.M. AST
APR. 19	09	47	37.5	63.55 N.	147.95 W.	33N	...	...	3.3M	...	G	APR. 18	11 P.M. AST
APR. 19	13	50	11.0	60.48 N.	153.05 W.	139	...	...	...	...	G	APR. 19	03 A.M. AST
APR. 22	07	42	07.3	62.84 N.	149.59 W.	99	...	...	...	...	G	APR. 21	09 P.M. AST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
ALASKA--Continued													
APR. 23	14	43	17.3	60.21 N.	141.06 W.	12	4.9	4.2	5.0M	...	G	APR. 23	04 A.M. AST
APR. 23	15	30	36.6	61.24 N.	146.15 W.	26	...	...	2.8M	III	G	APR. 23	05 A.M. AST
APR. 23	23	18	23.5	51.18 N.	179.84 W.	44	5.6	5.1	...	III	G	APR. 23	12 P.M. BST
APR. 23	23	18	49.9	63.05 N.	155.26 W.	33N	...	...	3.5M	...	G	APR. 23	01 P.M. AST
APR. 26	00	47	11.6	62.11 N.	150.67 W.	33N	...	...	2.9M	...	G	APR. 25	02 P.M. AST
APR. 26	15	13	48.1	61.44 N.	147.46 W.	50	...	...	3.0M	...	G	APR. 26	05 A.M. AST
APR. 27	12	39	24.4	60.01 N.	152.62 W.	124	4.2	...	...	...	G	APR. 27	02 A.M. AST
APR. 30	05	45	02.1	51.60 N.	176.34 E.	70	5.0	...	...	...	G	APR. 29	06 P.M. BST
APR. 30	15	30	06.5	61.64 N.	151.34 W.	76	...	...	...	...	G	APR. 30	05 A.M. AST
MAY 1	12	23	08.3	65.30 N.	156.46 W.	33N	...	...	3.3M	...	G	MAY 1	02 A.M. AST
MAY 2	15	35	58.6	60.12 N.	141.18 W.	13	5.0	5.1	5.4M	...	G	MAY 2	05 A.M. AST
MAY 2	15	42	21.5	59.85 N.	141.20 W.	15	...	...	4.5M	...	G	MAY 2	05 A.M. AST
MAY 2	15	54	03.3	59.98 N.	141.23 W.	15	...	...	4.1M	...	G	MAY 2	05 A.M. AST
MAY 2	16	11	57.3	59.97 N.	141.27 W.	15	...	...	3.3M	...	G	MAY 2	06 A.M. AST
MAY 2	16	24	50.6	60.00 N.	141.25 W.	15	...	...	3.6M	...	G	MAY 2	06 A.M. AST
MAY 2	16	31	59.5	60.05 N.	141.15 W.	15	3.7	...	3.7M	...	G	MAY 2	06 A.M. AST
MAY 2	17	00	26.9	60.13 N.	141.16 W.	15	4.5	...	5.0M	...	G	MAY 2	07 A.M. AST
MAY 2	17	13	37.8	60.09 N.	141.15 W.	15	4.5	4.4	4.4M	...	G	MAY 2	07 A.M. AST
MAY 2	17	57	12.7	52.25 N.	168.96 W.	37	4.6	...	...	...	G	MAY 2	06 A.M. BST
MAY 2	19	23	29.0	60.05 N.	141.13 W.	15	3.7	...	4.1M	...	G	MAY 2	09 A.M. AST
MAY 3	05	21	45.8	59.88 N.	141.18 W.	15	...	...	3.9M	...	G	MAY 2	07 P.M. AST
MAY 3	10	14	14.2	60.12 N.	141.12 W.	11	5.0	4.7	5.1M	IV	G	MAY 3	00 A.M. AST
MAY 3	10	29	08.1	59.99 N.	141.13 W.	15	4.3	...	3.8M	...	G	MAY 3	00 A.M. AST
MAY 3	12	12	03.5	59.89 N.	141.08 W.	15	...	...	3.7M	...	G	MAY 3	02 A.M. AST
MAY 3	15	17	26.1	60.03 N.	141.14 W.	15	4.2	...	4.6M	III	G	MAY 3	05 A.M. AST
MAY 3	20	45	24.9	59.94 N.	141.09 W.	15	...	...	4.0M	...	G	MAY 3	10 A.M. AST
MAY 3	22	20	21.7	61.39 N.	146.87 W.	33N	...	...	2.9M	...	G	MAY 3	12 P.M. AST
MAY 4	05	28	53.2	59.99 N.	141.16 W.	15	4.0	...	4.5M	...	G	MAY 3	07 P.M. AST
MAY 4	09	35	34.9	60.25 N.	152.57 W.	129	4.4	...	...	...	G	MAY 3	11 P.M. AST
MAY 4	23	01	01.9	59.97 N.	141.16 W.	15	3.8	...	3.9M	...	G	MAY 4	01 P.M. AST
MAY 5	19	49	54.3	61.25 N.	149.75 W.	63	4.8	...	...	V	G	MAY 5	09 A.M. AST
MAY 7	00	43	38.4	51.84 N.	177.58 W.	101	4.3	...	...	III	G	MAY 6	01 P.M. BST
MAY 7	05	16	26.9	60.44 N.	153.45 W.	175	...	...	...	...	G	MAY 6	07 P.M. AST
MAY 7	07	42	02.9	59.14 N.	152.57 W.	83	4.4	...	...	...	G	MAY 6	09 P.M. AST
MAY 8	00	52	21.6	53.54 N.	171.32 E.	33N	4.3	...	...	...	G	MAY 7	01 P.M. BST
MAY 8	00	59	52.8	51.65 N.	176.19 E.	33N	4.7	...	4.8M	...	G	MAY 7	01 P.M. BST
MAY 8	01	27	23.3	51.64 N.	176.16 E.	33N	4.4	...	...	...	G	MAY 7	02 P.M. BST
MAY 9	03	49	54.7	52.15 N.	170.57 W.	35	4.4	...	...	...	G	MAY 8	04 P.M. BST
MAY 9	09	32	48.0	62.02 N.	151.38 W.	100	...	...	...	...	G	MAY 8	11 P.M. AST
MAY 10	03	17	29.1	52.57 N.	169.81 W.	0	...	...	4.4L	...	L	MAY 9	04 P.M. BST
MAY 11	15	37	09.0	57.76 N.	154.07 W.	86	4.4	...	...	...	G	MAY 11	05 A.M. AST
MAY 13	05	18	28.4	52.09 N.	169.39 W.	33N	3.8	...	...	...	G	MAY 12	06 P.M. BST
MAY 14	10	00	50.7	54.48 N.	134.23 W.	10	4.1	...	4.1M	IV	G	MAY 14	02 A.M. PST
MAY 14	11	55	59.5	59.92 N.	141.13 W.	15	3.9	...	4.0M	...	G	MAY 14	01 A.M. AST
MAY 14	13	47	29.9	61.79 N.	151.07 W.	78	...	...	...	...	G	MAY 14	03 A.M. AST
MAY 14	16	26	13.7	62.32 N.	153.27 W.	33N	...	...	3.3M	...	G	MAY 14	06 A.M. AST
MAY 15	06	56	05.4	62.22 N.	150.89 W.	90	4.2	...	...	...	G	MAY 14	08 P.M. AST
MAY 15	19	51	01.5	59.99 N.	141.29 W.	15	4.1	...	4.2M	...	G	MAY 15	09 A.M. AST
MAY 16	17	42	27.6	62.79 N.	150.57 W.	111	...	...	...	...	G	MAY 16	07 A.M. AST
MAY 17	04	01	09.8	61.26 N.	146.17 W.	33N	...	...	3.2M	...	G	MAY 16	06 P.M. AST
MAY 20	04	56	17.8	62.23 N.	151.15 W.	94	...	...	...	...	G	MAY 19	06 P.M. AST
MAY 20	17	18	22.2	50.88 N.	172.60 W.	12	...	...	4.7L	...	L	MAY 20	06 A.M. BST
MAY 22	18	16	23.4	61.34 N.	147.29 W.	32	...	...	2.9M	...	G	MAY 22	08 A.M. AST
MAY 23	07	25	03.1	63.11 N.	150.88 W.	147	...	...	...	...	G	MAY 22	09 P.M. AST
MAY 23	12	53	23.4	60.45 N.	152.32 W.	104	...	...	...	...	G	MAY 23	02 A.M. AST
MAY 24	05	41	31.7	51.83 N.	165.53 W.	15	...	...	4.0L	...	L	MAY 23	06 P.M. BST
MAY 26	02	57	58.7	61.40 N.	150.86 W.	81	...	...	...	...	G	MAY 25	04 P.M. AST
MAY 30	05	53	45.6	59.27 N.	152.42 W.	33N	...	...	3.2M	...	G	MAY 29	07 P.M. AST
MAY 30	06	13	47.7	52.02 N.	169.86 W.	33N	4.5	...	3.8M	...	G	MAY 29	07 P.M. BST
MAY 31	04	34	09.1	60.43 N.	151.19 W.	9	...	...	2.9M	...	G	MAY 30	06 P.M. AST
MAY 31	11	19	04.7	58.20 N.	155.40 W.	33N	...	...	4.0M	...	G	MAY 31	01 A.M. AST
MAY 31	21	20	31.9	63.22 N.	150.64 W.	143	...	...	...	...	G	MAY 31	11 A.M. AST
JUNE 1	05	14	33.2	64.44 N.	148.14 W.	33N	...	...	3.4M	...	G	MAY 31	07 P.M. AST
JUNE 1	09	29	02.6	59.89 N.	152.70 W.	133	...	...	...	...	G	MAY 31	11 P.M. AST
JUNE 2	02	34	09.6	50.42 N.	179.52 W.	33N	3.9	...	4.2M	...	G	JUNE 1	03 P.M. BST
JUNE 2	08	21	45.0	62.30 N.	151.12 W.	123	...	...	...	...	G	JUNE 1	10 P.M. AST
JUNE 3	17	24	11.0	52.22 N.	168.63 W.	33N	5.3	4.9	...	...	G	JUNE 3	06 A.M. BST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
ALASKA--Continued													
JUNE 4	03	01	04.1	51.60 N.	177.33 W.	59	5.8	...	5.7M	V	G	JUNE 3	04 P.M. BST
JUNE 4	06	28	36.6	52.04 N.	168.44 W.	33N	4.7	...	...	...	G	JUNE 3	07 P.M. BST
JUNE 4	09	25	56.3	52.26 N.	168.75 W.	33N	4.6	...	...	...	G	JUNE 3	10 P.M. BST
JUNE 4	11	38	57.2	52.33 N.	168.71 W.	33N	4.5	...	...	...	G	JUNE 4	00 A.M. BST
JUNE 4	12	50	20.0	52.24 N.	168.59 W.	33N	4.7	4.1	3.5M	...	G	JUNE 4	01 A.M. BST
JUNE 4	14	00	44.2	51.20 N.	177.27 W.	41	4.1	...	4.7M	...	G	JUNE 4	03 A.M. BST
JUNE 4	15	58	18.5	52.35 N.	168.67 W.	33N	4.7	...	4.2M	...	G	JUNE 4	04 A.M. BST
JUNE 5	01	35	58.1	61.63 N.	146.26 W.	33N	...	...	3.0M	...	G	JUNE 4	03 P.M. AST
JUNE 5	20	40	24.7	56.97 N.	154.68 W.	33N	...	...	4.1M	...	G	JUNE 5	10 A.M. AST
JUNE 6	01	13	59.5	52.20 N.	168.61 W.	33N	5.2	4.5	...	...	G	JUNE 5	02 P.M. BST
JUNE 6	05	07	29.6	53.02 N.	166.87 W.	33N	4.5	...	...	...	G	JUNE 5	06 P.M. BST
JUNE 6	17	02	18.8	55.75 N.	154.48 W.	33N	4.3	...	4.4M	...	G	JUNE 6	07 A.M. AST
JUNE 7	16	09	19.6	52.03 N.	168.45 W.	33N	4.4	...	...	...	G	JUNE 7	05 A.M. BST
JUNE 8	03	31	35.1	62.74 N.	149.66 W.	114	...	...	...	...	G	JUNE 7	05 P.M. AST
JUNE 13	14	24	24.3	56.93 N.	136.02 W.	33N	3.8	...	4.2M	...	G	JUNE 13	06 A.M. PST
JUNE 14	02	07	25.6	62.28 N.	151.16 W.	109	...	...	...	...	G	JUNE 13	04 P.M. AST
JUNE 15	19	57	38.3	51.32 N.	178.47 W.	49	5.0	4.0	5.3M	III	G	JUNE 15	08 A.M. BST
JUNE 16	04	22	10.2	58.62 N.	155.70 W.	157	4.3	...	...	...	G	JUNE 15	06 P.M. AST
JUNE 18	05	00	46.2	62.21 N.	149.74 W.	72	...	...	...	...	G	JUNE 17	07 P.M. AST
JUNE 18	14	08	13.8	59.49 N.	152.33 W.	71	...	...	...	IV	G	JUNE 18	04 A.M. AST
JUNE 19	11	55	36.9	63.02 N.	151.08 W.	124	...	...	...	...	G	JUNE 19	01 A.M. AST
JUNE 21	04	59	30.2	60.96 N.	151.47 W.	94	3.9	...	...	...	G	JUNE 20	06 P.M. AST
JUNE 22	07	05	27.1	53.93 N.	166.64 W.	90	4.8	...	...	IV	G	JUNE 21	08 P.M. BST
JUNE 22	11	23	51.4	63.24 N.	148.02 W.	89	...	...	...	...	G	JUNE 22	01 A.M. AST
JUNE 23	02	11	47.0	63.32 N.	151.76 W.	33N	...	...	...	...	G	JUNE 22	04 P.M. AST
JUNE 23	09	51	29.6	51.93 N.	173.51 W.	33N	4.8	...	...	...	G	JUNE 22	10 P.M. BST
JUNE 24	04	57	58.7	64.78 N.	147.16 W.	15	...	...	3.0M	IV	G	JUNE 23	06 P.M. AST
JUNE 24	05	26	53.2	64.76 N.	147.44 W.	15	...	...	2.3M	FELT	G	JUNE 23	07 P.M. AST
JUNE 24	14	03	12.6	51.96 N.	170.92 W.	41	4.7	...	...	...	G	JUNE 24	03 A.M. BST
JUNE 25	23	12	12.9	62.95 N.	150.52 W.	119	...	...	...	...	G	JUNE 25	01 P.M. AST
JUNE 27	03	33	10.4	56.99 N.	156.96 W.	33N	...	...	3.2M	...	G	JUNE 26	05 P.M. AST
JUNE 29	06	52	12.4	51.31 N.	175.74 W.	48	4.8	3.8	4.3M	...	G	JUNE 28	07 P.M. BST
JUNE 29	13	23	29.9	62.85 N.	151.13 W.	137	...	...	...	...	G	JUNE 29	03 A.M. AST
JULY 1	00	09	52.2	59.48 N.	152.83 W.	97	4.5	...	...	III	G	JUNE 30	02 P.M. AST
JULY 1	07	41	53.2	51.43 N.	179.94 W.	48	6.3	5.5	5.4M	IV	G	JUNE 30	08 P.M. BST
JULY 1	22	18	11.8	63.55 N.	145.68 W.	8	...	...	3.6M	FELT	G	JULY 1	12 P.M. AST
JULY 2	03	49	06.0	59.92 N.	152.31 W.	86	3.8	...	...	...	G	JULY 1	05 P.M. AST
JULY 2	07	55	00.7	59.86 N.	153.62 W.	170	...	...	...	...	G	JULY 1	09 P.M. AST
JULY 3	05	26	18.1	62.22 N.	151.11 W.	83	...	...	...	...	G	JULY 2	07 P.M. AST
JULY 3	07	36	38.2	51.41 N.	179.99 W.	33N	4.4	...	...	...	G	JULY 2	08 P.M. BST
JULY 3	17	08	38.9	51.40 N.	179.92 W.	63	4.7	...	...	...	G	JULY 3	06 A.M. BST
JULY 6	17	10	00.6	53.35 N.	167.32 W.	77	...	...	...	...	G	JULY 6	06 A.M. BST
JULY 6	17	33	08.8	59.22 N.	152.64 W.	69	4.8	...	...	IV	G	JULY 6	07 A.M. AST
JULY 6	19	48	11.9	61.69 N.	150.19 W.	18	...	...	3.3M	III	G	JULY 6	09 A.M. AST
JULY 8	06	43	16.2	53.10 N.	167.03 W.	58	4.5	...	...	...	G	JULY 7	07 P.M. BST
JULY 9	02	23	50.7	50.27 N.	179.94 W.	38	4.8	...	...	...	G	JULY 8	03 P.M. BST
JULY 9	07	40	43.8	62.83 N.	149.77 W.	88	...	...	2.7M	FELT	A	JULY 8	09 P.M. AST
JULY 10	09	22	37.6	61.17 N.	149.66 W.	59	4.3	...	4.0M	IV	G	JULY 9	11 P.M. AST
JULY 10	20	11	50.2	51.61 N.	176.05 W.	62	4.5	...	...	...	G	JULY 10	09 A.M. BST
JULY 11	23	42	12.4	61.55 N.	145.94 W.	33N	...	...	3.0M	...	G	JULY 11	01 P.M. AST
JULY 12	08	10	22.1	63.89 N.	149.08 W.	136	...	...	...	...	G	JULY 11	10 P.M. AST
JULY 14	08	17	00.1	64.69 N.	152.34 W.	33N	...	...	3.9M	...	G	JULY 13	10 P.M. AST
JULY 14	11	15	34.1	67.93 N.	161.49 W.	15	4.2	...	...	...	G	JULY 14	00 A.M. BST
JULY 14	12	15	47.6	60.51 N.	153.67 W.	157	5.0	...	...	IV	G	JULY 14	02 A.M. AST
JULY 15	00	54	56.7	58.60 N.	153.55 W.	33N	...	...	2.9M	...	G	JULY 14	02 P.M. AST
JULY 15	05	48	29.5	58.64 N.	150.75 W.	33N	3.9	...	3.2M	...	G	JULY 14	07 P.M. AST
JULY 17	00	12	20.9	52.59 N.	163.53 W.	5	4.6	...	...	...	L	JULY 16	01 P.M. BST
JULY 17	02	02	47.3	49.96 N.	179.97 E.	33N	4.4	...	...	...	G	JULY 16	03 P.M. BST
JULY 17	21	38	45.9	55.62 N.	158.69 W.	58	...	...	4.1L	...	L	JULY 17	11 A.M. AST
JULY 18	03	40	16.2	55.77 N.	159.40 W.	79	...	...	5.2L	...	L	JULY 17	05 P.M. AST
JULY 18	08	19	37.2	63.08 N.	150.04 W.	99	...	...	...	...	G	JULY 17	10 P.M. AST
JULY 18	17	47	27.8	51.94 N.	170.39 W.	33N	4.7	4.0	3.9M	...	G	JULY 18	06 A.M. BST
JULY 19	17	22	28.5	51.91 N.	170.54 W.	33N	5.0	4.3	...	...	G	JULY 19	06 A.M. BST
JULY 20	14	18	40.9	52.23 N.	168.72 W.	33N	4.4	...	4.1L	...	G	JULY 20	03 A.M. BST
JULY 20	14	26	38.6	52.26 N.	168.77 W.	33N	5.0	4.5	4.3L	...	G	JULY 20	03 A.M. BST
JULY 20	19	59	56.9	52.10 N.	174.18 E.	44	4.8	4.1	...	...	G	JULY 20	08 A.M. BST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)		Long (°)		Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date		Hour	
ALASKA--Continued																	
JULY 21	23	37	34.1	54.95	N.	156.90	W.	33N	5.0	4.4	4.3L	...	G	JULY	21	01 P.M.	AST
JULY 21	23	49	08.5	55.00	N.	156.99	W.	33N	4.8	...	...	...	G	JULY	21	01 P.M.	AST
JULY 22	03	48	17.2	51.58	N.	170.08	W.	33N	4.5	...	...	...	G	JULY	21	04 P.M.	BST
JULY 22	11	02	25.4	54.65	N.	156.87	W.	11	...	...	4.2L	...	L	JULY	22	01 A.M.	AST
JULY 22	14	34	02.1	52.42	N.	169.60	W.	33N	4.9	4.0	...	...	G	JULY	22	03 A.M.	BST
JULY 22	21	26	27.6	59.45	N.	145.11	W.	33N	...	...	3.7M	...	G	JULY	22	11 A.M.	AST
JULY 25	05	39	01.8	52.04	N.	178.44	E.	106	4.5	...	...	...	G	JULY	24	06 P.M.	BST
JULY 26	00	32	57.5	53.01	N.	161.05	W.	17	...	...	5.6L	...	L	JULY	25	02 P.M.	AST
JULY 26	02	25	15.7	56.11	N.	158.11	W.	93	...	...	3.4L	...	L	JULY	25	04 P.M.	AST
JULY 26	05	06	51.4	62.36	N.	147.75	W.	57	4.1	...	3.8M	III	G	JULY	25	07 P.M.	AST
JULY 27	12	34	51.8	52.84	N.	176.41	W.	228	4.6	...	...	...	G	JULY	27	01 A.M.	BST
JULY 27	14	40	50.5	64.45	N.	147.29	W.	12	...	...	2.0M	FELT	A	JULY	27	04 A.M.	AST
JULY 28	05	02	06.3	52.29	N.	169.49	W.	33N	4.4	...	3.6M	...	G	JULY	27	06 P.M.	BST
JULY 28	05	29	39.6	52.16	N.	169.23	W.	33N	4.6	4.3	4.0M	...	G	JULY	27	06 P.M.	BST
JULY 28	09	44	43.4	52.19	N.	169.38	W.	33N	5.0	4.1	4.5M	...	G	JULY	27	10 P.M.	BST
JULY 28	17	38	51.2	49.61	N.	160.86	W.	24	...	...	4.9L	...	L	JULY	28	07 A.M.	AST
JULY 28	19	24	47.4	61.24	N.	147.01	W.	33N	...	...	3.2M	...	G	JULY	28	09 A.M.	AST
JULY 29	05	56	20.6	59.49	N.	152.51	W.	89	...	...	...	...	G	JULY	28	07 P.M.	AST
JULY 30	01	41	50.4	64.69	N.	149.83	W.	15	...	...	3.9M	FELT	G	JULY	29	03 P.M.	AST
JULY 31	06	29	15.5	51.76	N.	176.14	E.	38	6.2	6.0	5.9M	III	G	JULY	30	07 P.M.	BST
AUG. 1	20	23	31.4	57.46	N.	153.72	W.	52	4.3	...	3.9M	...	G	AUG.	1	10 A.M.	AST
AUG. 2	02	34	17.3	63.00	N.	151.02	W.	151	4.1	...	...	...	G	AUG.	1	04 P.M.	AST
AUG. 3	06	09	53.7	60.29	N.	140.74	W.	14	...	...	3.4M	...	G	AUG.	2	09 P.M.	YST
AUG. 4	18	02	32.0	63.37	N.	151.17	W.	33N	...	...	2.9M	...	G	AUG.	4	08 A.M.	AST
AUG. 5	14	45	03.1	61.42	N.	149.89	W.	37	...	...	3.0M	FELT	G	AUG.	5	04 A.M.	AST
AUG. 6	00	41	55.3	51.14	N.	177.75	W.	33N	4.5	...	4.1M	III	G	AUG.	5	01 P.M.	BST
AUG. 6	04	53	58.6	51.95	N.	176.09	W.	64	5.4	...	...	IV	G	AUG.	5	05 P.M.	BST
AUG. 7	08	37	25.8	60.21	N.	139.54	W.	15	4.7	...	...	III	G	AUG.	6	11 P.M.	YST
AUG. 7	19	53	46.1	66.00	N.	166.77	W.	15	4.8	4.7	...	IV	G	AUG.	7	08 A.M.	BST
AUG. 8	14	11	00.6	51.85	N.	176.09	W.	68	4.8	...	...	FELT	G	AUG.	8	03 A.M.	BST
AUG. 9	12	47	54.6	51.82	N.	175.96	W.	67	4.8	...	...	FELT	G	AUG.	9	01 A.M.	BST
AUG. 10	16	25	39.3	60.12	N.	153.07	W.	132	4.9	...	...	...	G	AUG.	10	06 A.M.	AST
AUG. 10	19	12	20.2	62.13	N.	149.73	W.	57	...	...	4.2M	FELT	G	AUG.	10	09 A.M.	AST
AUG. 12	09	58	19.3	55.75	N.	156.81	W.	33N	4.9	...	4.0M	...	G	AUG.	11	11 P.M.	AST
AUG. 13	11	11	04.5	56.23	N.	161.72	W.	33N	...	...	3.9M	...	G	AUG.	13	00 A.M.	BST
AUG. 15	10	45	40.2	52.03	N.	172.88	W.	33N	...	...	...	...	G	AUG.	14	11 P.M.	BST
AUG. 15	12	52	02.8	58.96	N.	154.45	W.	152	...	...	...	...	G	AUG.	15	02 A.M.	AST
AUG. 15	15	47	27.1	65.01	N.	162.07	W.	33N	4.4	...	4.6M	FELT	G	AUG.	15	04 A.M.	BST
AUG. 16	20	58	20.7	51.78	N.	174.06	W.	49	5.4	4.6	4.8M	III	G	AUG.	16	09 A.M.	BST
AUG. 18	00	05	46.4	53.08	N.	163.92	W.	44	4.7	...	...	...	G	AUG.	17	01 P.M.	BST
AUG. 18	06	32	04.3	54.96	N.	160.12	W.	35	...	...	4.2L	...	L	AUG.	17	08 P.M.	AST
AUG. 19	14	46	27.9	52.20	N.	169.51	W.	33N	5.2	4.0	...	...	G	AUG.	19	03 A.M.	BST
AUG. 21	05	44	24.8	62.39	N.	152.15	W.	16	4.0	...	3.9M	...	G	AUG.	20	07 P.M.	AST
AUG. 21	19	20	36.7	53.57	N.	163.65	W.	38	5.0	4.7	...	...	G	AUG.	21	08 A.M.	BST
AUG. 22	15	23	21.3	51.66	N.	176.78	W.	59	5.1	...	...	III	G	AUG.	22	04 A.M.	BST
AUG. 22	15	44	21.3	61.62	N.	149.67	W.	39	...	...	3.2M	FELT	G	AUG.	22	05 A.M.	AST
AUG. 23	16	17	13.3	62.14	N.	150.86	W.	106	...	...	...	...	G	AUG.	23	06 A.M.	AST
AUG. 24	04	09	15.6	53.65	N.	165.44	W.	33N	5.3	4.8	4.6L	IV	G	AUG.	23	05 P.M.	BST
AUG. 25	15	05	17.8	60.20	N.	139.51	W.	15	4.7	...	5.1M	...	G	AUG.	25	06 A.M.	YST
AUG. 25	20	00	44.6	62.66	N.	149.63	W.	14	...	...	3.6M	...	G	AUG.	25	10 A.M.	AST
AUG. 25	21	12	24.7	62.09	N.	149.70	W.	56	...	...	3.1M	...	G	AUG.	25	11 A.M.	AST
AUG. 26	08	15	15.4	53.61	N.	163.94	W.	9	4.7	...	4.0L	...	L	AUG.	25	09 P.M.	BST
AUG. 26	19	02	23.4	58.99	N.	136.95	W.	15	4.1	...	...	FELT	G	AUG.	26	11 A.M.	PST
AUG. 27	11	59	00.6	51.39	N.	178.28	W.	49	5.1	4.4	4.9M	FELT	G	AUG.	27	00 A.M.	BST
AUG. 28	18	02	45.7	63.46	N.	151.38	W.	33N	...	...	3.1M	...	G	AUG.	28	08 A.M.	AST
AUG. 29	16	44	18.2	64.03	N.	147.35	W.	69	...	...	...	...	G	AUG.	29	06 A.M.	AST
AUG. 29	16	49	03.9	62.90	N.	148.65	W.	101	3.8	...	...	...	G	AUG.	29	06 A.M.	AST
AUG. 30	08	23	11.2	63.18	N.	150.49	W.	117	...	...	...	...	G	AUG.	29	10 P.M.	AST
AUG. 30	09	15	59.6	63.18	N.	149.80	W.	122	...	...	...	...	G	AUG.	29	11 P.M.	AST
AUG. 30	13	30	05.8	54.33	N.	161.44	W.	0	5.2	4.3	5.2L	FELT	L	AUG.	30	02 A.M.	BST
AUG. 31	07	16	14.7	63.06	N.	150.99	W.	137	...	...	...	...	G	AUG.	30	09 P.M.	AST
SEPT. 1	06	19	24.8	61.22	N.	150.82	W.	93	3.8	...	...	III	G	AUG.	31	08 P.M.	AST
SEPT. 1	11	46	43.5	58.80	N.	152.70	W.	33N	...	...	4.1M	...	G	SEPT.	1	01 A.M.	AST
SEPT. 2	00	56	56.9	63.16	N.	149.66	W.	116	...	...	...	...	G	SEPT.	1	02 P.M.	AST
SEPT. 2	19	13	10.1	60.15	N.	153.19	W.	125	4.0	...	...	...	G	SEPT.	2	09 A.M.	AST
SEPT. 3	02	39	47.9	52.57	N.	166.93	W.	33N	4.8	...	...	...	G	SEPT.	2	03 P.M.	BST
SEPT. 3	21	16	10.6	62.04	N.	151.71	W.	113	...	...	...	...	G	SEPT.	3	11 A.M.	AST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
ALASKA--Continued													
SEPT. 4	22	41	38.1	53.61 N.	163.74 W.	33N	4.7	...	...	...	G	SEPT. 4	11 A.M. BST
SEPT. 5	17	46	47.4	51.83 N.	174.20 W.	33N	4.5	...	...	...	G	SEPT. 5	06 A.M. BST
SEPT. 6	07	48	54.9	56.84 N.	151.59 W.	33N	5.7	5.6	6.0M	III	G	SEPT. 5	09 P.M. AST
SEPT. 7	03	55	13.4	56.91 N.	151.24 W.	33N	4.5	...	3.5M	...	G	SEPT. 6	05 P.M. AST
SEPT. 9	10	19	55.3	57.05 N.	156.15 W.	90	4.1	...	...	...	G	SEPT. 9	00 A.M. AST
SEPT. 10	05	48	00.0	56.22 N.	150.20 W.	33N	4.5	4.3	4.2M	...	G	SEPT. 9	07 P.M. AST
SEPT. 10	18	04	29.0	56.16 N.	154.85 W.	33N	4.3	...	3.8M	...	G	SEPT. 10	08 A.M. AST
SEPT. 12	09	22	23.1	52.64 N.	166.94 W.	33N	5.7	5.9	5.4M	...	G	SEPT. 11	10 P.M. BST
SEPT. 12	09	28	14.1	52.69 N.	166.88 W.	33N	4.8	...	...	...	G	SEPT. 11	10 P.M. BST
SEPT. 12	09	28	39.5	53.02 N.	167.10 W.	33N	5.1	...	...	...	G	SEPT. 11	10 P.M. BST
SEPT. 12	09	32	38.8	52.30 N.	166.71 W.	33N	4.8	...	...	...	G	SEPT. 11	10 P.M. BST
SEPT. 12	09	50	51.7	52.83 N.	166.99 W.	33N	4.7	...	3.5M	...	G	SEPT. 11	10 P.M. BST
SEPT. 12	10	05	17.3	52.40 N.	166.78 W.	33N	4.5	...	3.4M	...	G	SEPT. 11	11 P.M. BST
SEPT. 12	10	11	26.3	52.32 N.	166.78 W.	33N	4.7	...	3.5M	...	G	SEPT. 11	11 P.M. BST
SEPT. 12	11	59	52.0	52.64 N.	166.85 W.	33N	5.2	4.8	5.0M	...	G	SEPT. 12	00 A.M. BST
SEPT. 12	12	18	26.8	52.49 N.	166.80 W.	33N	4.5	...	3.2M	...	G	SEPT. 12	01 A.M. BST
SEPT. 12	15	01	38.9	52.50 N.	166.80 W.	33N	...	...	3.1M	...	G	SEPT. 12	04 A.M. BST
SEPT. 12	16	50	37.7	52.82 N.	167.05 W.	33N	5.5	5.1	5.3M	...	G	SEPT. 12	05 A.M. BST
SEPT. 12	16	57	59.0	52.43 N.	166.78 W.	33N	4.6	...	3.5M	...	G	SEPT. 12	05 A.M. BST
SEPT. 12	17	24	00.1	52.38 N.	166.75 W.	33N	4.6	...	...	...	G	SEPT. 12	06 A.M. BST
SEPT. 13	00	50	22.6	52.59 N.	166.93 W.	33N	4.8	...	...	...	G	SEPT. 12	01 P.M. BST
SEPT. 13	11	34	55.2	52.73 N.	166.92 W.	33N	4.7	4.1	...	...	G	SEPT. 13	00 A.M. BST
SEPT. 13	21	48	13.6	62.81 N.	150.73 W.	33N	...	...	3.0M	...	G	SEPT. 13	11 A.M. AST
SEPT. 14	18	14	50.7	59.28 N.	151.71 W.	109	...	...	...	...	G	SEPT. 14	08 A.M. AST
SEPT. 15	03	37	23.8	59.57 N.	151.34 W.	93	...	...	...	...	G	SEPT. 14	05 P.M. AST
SEPT. 15	10	11	32.5	62.94 N.	151.30 W.	153	...	...	...	...	G	SEPT. 15	00 A.M. AST
SEPT. 16	06	46	07.9	52.95 N.	167.03 W.	33N	5.0	4.5	...	...	G	SEPT. 15	07 P.M. BST
SEPT. 18	06	24	13.4	60.63 N.	151.87 W.	92	...	...	...	...	G	SEPT. 17	08 P.M. AST
SEPT. 18	20	41	00.8	53.26 N.	167.10 W.	33N	4.7	...	4.1M	...	G	SEPT. 18	09 A.M. BST
SEPT. 19	00	30	41.4	62.74 N.	150.88 W.	127	...	...	...	...	G	SEPT. 18	02 P.M. AST
SEPT. 20	09	29	46.8	52.69 N.	166.92 W.	33N	4.8	...	...	...	G	SEPT. 19	10 P.M. BST
SEPT. 21	09	54	19.8	52.80 N.	166.98 W.	33N	4.5	...	...	...	G	SEPT. 20	10 P.M. BST
SEPT. 26	18	49	57.1	63.83 N.	148.85 W.	133	...	...	...	...	G	SEPT. 26	08 A.M. AST
SEPT. 26	19	57	57.3	59.44 N.	156.01 W.	87	...	...	...	...	G	SEPT. 26	09 A.M. AST
SEPT. 27	09	44	50.7	63.15 N.	150.49 W.	125	3.7	...	...	...	G	SEPT. 26	11 P.M. AST
SEPT. 30	09	48	05.1	65.75 N.	145.06 W.	15	...	...	4.3M	FELT	G	SEPT. 29	11 P.M. AST
SEPT. 30	18	52	33.2	57.92 N.	156.84 W.	33N	...	...	3.2M	...	G	SEPT. 30	08 A.M. AST
SEPT. 30	23	39	33.9	61.63 N.	150.82 W.	86	...	...	...	...	G	SEPT. 30	01 P.M. AST
OCT. 1	07	59	14.0	61.61 N.	146.36 W.	64	...	...	...	...	G	SEPT. 30	09 P.M. AST
OCT. 1	14	42	55.1	56.18 N.	149.93 W.	33N	4.4	...	...	...	G	OCT. 1	04 A.M. AST
OCT. 1	15	35	48.8	60.31 N.	141.40 W.	15	4.1	...	3.9M	...	G	OCT. 1	05 A.M. AST
OCT. 2	04	38	04.9	53.38 N.	163.58 W.	33N	4.6	...	...	...	G	OCT. 1	05 P.M. BST
OCT. 2	11	14	07.2	56.30 N.	152.61 W.	33N	4.2	...	3.3M	...	G	OCT. 2	01 A.M. AST
OCT. 3	16	18	10.6	56.07 N.	150.02 W.	33N	4.2	...	3.6M	...	G	OCT. 3	06 A.M. AST
OCT. 4	07	46	52.8	51.44 N.	176.62 W.	38	5.5	5.0	5.2M	FELT	G	OCT. 3	08 P.M. BST
OCT. 5	17	20	35.8	61.59 N.	150.13 W.	60	...	...	3.1M	...	G	OCT. 5	07 A.M. AST
OCT. 8	10	44	52.5	59.20 N.	152.48 W.	33N	3.8	...	3.8M	...	G	OCT. 8	00 A.M. AST
OCT. 11	15	31	12.1	61.60 N.	149.94 W.	59	...	...	3.2M	...	G	OCT. 11	05 A.M. AST
OCT. 12	08	47	14.3	65.85 N.	155.10 W.	33N	...	...	3.6M	...	G	OCT. 11	10 P.M. AST
OCT. 14	04	47	12.2	60.48 N.	144.74 W.	15	4.3	4.0	4.1M	...	G	OCT. 13	06 P.M. AST
OCT. 14	16	13	25.9	55.22 N.	150.98 W.	25	...	...	4.6L	...	L	OCT. 14	06 A.M. AST
OCT. 15	15	19	20.1	62.16 N.	151.36 W.	106	...	...	...	...	G	OCT. 15	05 A.M. AST
OCT. 15	19	31	29.1	51.87 N.	177.40 W.	89	4.2	...	...	...	G	OCT. 15	08 A.M. BST
OCT. 16	09	22	48.5	60.70 N.	150.65 W.	33N	...	...	3.0M	...	G	OCT. 15	11 P.M. AST
OCT. 17	18	50	00.3	59.67 N.	141.47 W.	15	...	...	3.4M	...	G	OCT. 17	08 A.M. AST
OCT. 18	04	16	34.7	52.32 N.	173.28 W.	53	4.4	...	...	...	G	OCT. 17	05 P.M. BST
OCT. 18	12	19	10.5	65.10 N.	149.33 W.	15	...	...	...	...	G	OCT. 18	02 A.M. AST
OCT. 19	19	20	08.8	59.46 N.	144.98 W.	33N	4.7	...	4.8M	...	G	OCT. 19	09 A.M. AST
OCT. 21	11	10	34.7	52.73 N.	172.13 E.	33N	4.9	...	4.3M	...	G	OCT. 21	00 A.M. BST
OCT. 23	08	51	27.6	62.81 N.	149.43 W.	78	...	...	...	...	G	OCT. 22	10 P.M. AST
OCT. 24	04	44	03.7	59.40 N.	144.91 W.	33N	4.0	...	3.8M	...	G	OCT. 23	06 P.M. AST
OCT. 25	13	48	09.6	56.72 N.	156.63 W.	66	4.8	...	...	...	G	OCT. 25	03 A.M. AST
OCT. 27	14	32	24.7	52.34 N.	168.43 W.	33N	5.1	...	3.9M	...	G	OCT. 27	03 A.M. BST
OCT. 27	16	14	04.7	62.86 N.	150.83 W.	112	...	...	...	...	G	OCT. 27	06 A.M. AST
OCT. 28	14	41	26.5	52.16 N.	171.25 W.	33N	4.9	...	4.6M	...	G	OCT. 28	03 A.M. BST
OCT. 30	09	53	13.4	51.66 N.	178.93 W.	80	...	...	...	...	G	OCT. 29	10 P.M. BST
NOV. 2	02	46	43.2	63.26 N.	151.76 W.	68	...	...	...	...	G	NOV. 1	04 P.M. AST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
ALASKA--Continued													
NOV. 2	18	00	19.5	52.65 N.	171.26 E.	33N	4.6	...	...	...	G	NOV. 2	07 A.M. BST
NOV. 3	06	34	01.9	62.56 N.	151.20 W.	115	...	...	...	...	G	NOV. 2	08 P.M. AST
NOV. 4	00	04	56.5	61.53 N.	151.62 W.	120	...	...	...	FELT	G	NOV. 3	02 P.M. AST
NOV. 4	05	18	41.2	62.92 N.	151.26 W.	156	...	...	...	...	G	NOV. 3	07 P.M. AST
NOV. 5	03	39	44.5	56.17 N.	150.22 W.	33N	...	...	4.2M	...	G	NOV. 4	05 P.M. AST
NOV. 5	13	06	46.7	67.81 N.	150.06 W.	33N	...	...	4.5M	FELT	G	NOV. 5	03 A.M. AST
NOV. 5	13	14	27.3	61.12 N.	151.35 W.	100	...	...	...	...	G	NOV. 5	03 A.M. AST
NOV. 6	00	57	47.2	62.74 N.	149.73 W.	97	3.9	...	...	...	G	NOV. 5	02 P.M. AST
NOV. 6	13	01	47.7	61.99 N.	151.73 W.	131	4.1	...	...	...	G	NOV. 6	03 A.M. AST
NOV. 6	23	34	58.7	62.93 N.	150.50 W.	121	4.5	...	...	...	G	NOV. 6	01 P.M. AST
NOV. 7	06	06	09.0	58.80 N.	152.21 W.	33N	4.3	...	3.5M	...	G	NOV. 6	08 P.M. AST
NOV. 8	14	39	35.6	65.13 N.	151.79 W.	33N	...	...	3.0M	...	G	NOV. 8	04 A.M. AST
NOV. 9	01	01	02.4	65.08 N.	152.05 W.	33N	...	...	2.8M	...	G	NOV. 8	03 P.M. AST
NOV. 9	06	48	44.7	63.35 N.	151.04 W.	22	...	...	2.5M	...	G	NOV. 8	08 P.M. AST
NOV. 9	16	00	10.8	51.17 N.	168.56 W.	4	...	...	4.1L	...	L	NOV. 9	05 A.M. BST
NOV. 9	18	55	00.4	62.29 N.	151.16 W.	113	...	...	...	...	G	NOV. 9	08 A.M. AST
NOV. 10	03	22	37.1	57.94 N.	156.12 W.	145	...	...	...	...	G	NOV. 9	05 P.M. AST
NOV. 10	04	35	12.0	66.81 N.	146.40 W.	33N	...	...	...	...	G	NOV. 9	06 P.M. AST
NOV. 10	08	14	28.9	64.42 N.	153.42 W.	33N	...	...	3.2M	...	G	NOV. 9	10 P.M. AST
NOV. 10	17	23	52.5	60.90 N.	146.42 W.	40	4.8	...	4.3M	FELT	G	NOV. 10	07 A.M. AST
NOV. 10	22	55	15.9	61.44 N.	146.03 W.	33N	...	...	3.4M	...	G	NOV. 10	12 P.M. AST
NOV. 12	22	31	54.3	58.92 N.	153.26 W.	94	...	...	...	...	G	NOV. 12	12 P.M. AST
NOV. 15	01	06	15.6	52.86 N.	170.65 E.	33N	4.6	...	...	...	G	NOV. 14	02 P.M. BST
NOV. 15	19	16	54.5	63.47 N.	148.73 W.	102	3.9	...	...	...	G	NOV. 15	09 A.M. AST
NOV. 16	22	10	12.8	60.36 N.	152.77 W.	132	...	...	...	...	G	NOV. 16	12 P.M. AST
NOV. 17	05	27	27.5	61.46 N.	150.66 W.	73	...	...	...	...	G	NOV. 16	07 P.M. AST
NOV. 17	12	01	49.8	53.15 N.	169.57 W.	33N	4.4	...	...	...	G	NOV. 17	01 A.M. BST
NOV. 18	00	14	28.7	59.85 N.	145.90 W.	33N	...	...	3.3M	...	G	NOV. 17	02 P.M. AST
NOV. 18	01	21	47.2	60.26 N.	145.88 W.	33N	...	...	3.6M	...	G	NOV. 17	03 P.M. AST
NOV. 19	16	43	56.4	59.37 N.	152.67 W.	117	...	...	...	...	G	NOV. 19	06 A.M. AST
NOV. 21	00	17	36.7	58.74 N.	152.59 W.	90	...	...	...	...	G	NOV. 20	02 P.M. AST
NOV. 21	10	48	07.3	62.46 N.	151.15 W.	106	...	...	...	...	G	NOV. 21	00 A.M. AST
NOV. 21	14	16	45.6	62.88 N.	149.59 W.	100	...	...	...	...	G	NOV. 21	04 A.M. AST
NOV. 22	07	51	23.8	62.04 N.	150.57 W.	24	4.3	...	4.1M	...	G	NOV. 21	09 P.M. AST
NOV. 23	20	08	38.4	65.13 N.	149.23 W.	33N	...	...	3.3M	...	G	NOV. 23	10 A.M. AST
NOV. 24	12	17	10.1	51.13 N.	178.31 W.	33N	4.2	...	...	...	G	NOV. 24	01 A.M. BST
NOV. 24	22	15	10.8	63.98 N.	148.79 W.	33N	...	...	3.0M	...	G	NOV. 24	12 P.M. AST
NOV. 28	21	58	29.4	61.86 N.	150.71 W.	61	...	...	...	...	G	NOV. 28	11 A.M. AST
NOV. 28	22	48	44.8	51.58 N.	175.92 W.	61	4.2	...	...	...	G	NOV. 28	11 A.M. BST
NOV. 28	23	33	37.9	60.88 N.	149.66 W.	57	...	...	3.3M	...	G	NOV. 28	01 P.M. AST
NOV. 29	18	41	29.3	59.75 N.	153.40 W.	128	...	...	...	...	G	NOV. 29	08 A.M. AST
NOV. 29	21	46	32.2	61.89 N.	150.91 W.	25	...	...	3.5M	...	G	NOV. 29	11 A.M. AST
DEC. 1	12	47	04.2	59.80 N.	152.84 W.	114	...	...	...	...	G	DEC. 1	02 A.M. AST
DEC. 2	09	43	53.4	51.88 N.	170.45 W.	33N	5.5	4.8	...	...	G	DEC. 1	10 P.M. BST
DEC. 3	23	52	32.2	60.69 N.	151.45 W.	97	...	...	...	...	G	DEC. 3	01 P.M. AST
DEC. 5	12	09	51.8	60.26 N.	152.15 W.	90	4.9	...	...	IV	G	DEC. 5	02 A.M. AST
DEC. 6	12	39	26.4	56.76 N.	151.99 W.	33N	4.6	...	3.9M	...	G	DEC. 6	02 A.M. AST
DEC. 8	06	10	17.5	53.85 N.	160.45 W.	33N	4.8	...	...	...	G	DEC. 7	08 P.M. AST
DEC. 9	14	56	25.6	59.43 N.	152.74 W.	91	...	...	...	...	G	DEC. 9	04 A.M. AST
DEC. 10	09	04	09.9	62.64 N.	149.31 W.	33N	...	...	3.5M	...	G	DEC. 9	11 P.M. AST
DEC. 11	20	35	38.0	52.51 N.	172.18 E.	33N	4.6	...	...	...	G	DEC. 11	09 A.M. BST
DEC. 12	06	54	10.7	59.87 N.	153.47 W.	144	3.6	...	...	...	G	DEC. 11	08 P.M. AST
DEC. 12	11	56	04.3	51.47 N.	178.92 W.	54	4.6	...	...	...	G	DEC. 12	00 A.M. BST
DEC. 12	15	30	07.9	62.26 N.	151.11 W.	89	4.2	...	...	...	G	DEC. 12	05 A.M. AST
DEC. 13	02	01	29.4	51.82 N.	175.53 E.	59	4.4	...	...	...	G	DEC. 12	03 P.M. BST
DEC. 14	13	45	09.0	52.02 N.	179.05 E.	33N	4.4	...	...	...	G	DEC. 14	02 A.M. BST
DEC. 14	23	34	21.0	63.86 N.	147.31 W.	33N	...	...	...	...	G	DEC. 14	01 P.M. AST
DEC. 15	12	13	26.5	61.97 N.	149.15 W.	16	...	...	3.0M	...	G	DEC. 15	02 A.M. AST
DEC. 16	09	34	44.8	62.25 N.	150.97 W.	98	...	...	...	II	G	DEC. 15	11 P.M. AST
DEC. 17	10	55	54.7	60.68 N.	152.83 W.	153	...	...	...	...	G	DEC. 17	00 A.M. AST
DEC. 17	11	03	20.4	56.45 N.	150.05 W.	33N	4.4	...	4.3M	...	G	DEC. 17	01 A.M. AST
DEC. 17	12	17	19.5	64.07 N.	149.80 W.	33N	...	...	3.1M	...	G	DEC. 17	02 A.M. AST
DEC. 18	06	05	21.1	61.94 N.	147.19 W.	59	3.9	...	3.5M	...	G	DEC. 17	08 P.M. AST
DEC. 18	21	57	25.0	63.19 N.	150.84 W.	142	...	...	...	...	G	DEC. 18	11 A.M. AST
DEC. 19	17	34	32.9	57.35 N.	152.06 W.	33N	4.4	...	3.8M	...	G	DEC. 19	07 A.M. AST
DEC. 21	01	01	44.7	59.77 N.	153.52 W.	126	...	...	...	...	G	DEC. 20	03 P.M. AST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
ALASKA--Continued													
DEC. 23	08	24	54.2	63.72 N.	153.11 W.	33N	...	...	3.0M	...	G	DEC. 22	10 P.M. AST
DEC. 24	23	31	03.0	52.58 N.	173.29 E.	72	5.2	...	...	IV	G	DEC. 24	12 P.M. BST
DEC. 25	02	17	31.6	52.08 N.	174.98 W.	246	4.4	...	...	...	G	DEC. 24	03 P.M. BST
DEC. 25	02	39	44.3	52.98 N.	170.88 E.	33N	4.6	...	4.9M	...	G	DEC. 24	03 P.M. BST
DEC. 25	04	02	45.9	59.80 N.	141.14 W.	15	...	...	3.8M	...	G	DEC. 24	06 P.M. AST
DEC. 25	05	12	22.3	61.31 N.	147.10 W.	63	...	...	...	...	G	DEC. 24	07 P.M. AST
DEC. 25	09	59	16.1	63.08 N.	148.61 W.	80	3.6	...	...	...	G	DEC. 24	11 P.M. AST
DEC. 26	03	10	02.6	55.51 N.	159.88 W.	41	4.1	...	3.4M	...	G	DEC. 25	05 P.M. AST
DEC. 26	03	24	17.7	66.24 N.	150.79 W.	33N	...	...	3.1M	...	G	DEC. 25	05 P.M. AST
DEC. 27	02	38	35.8	61.19 N.	152.35 W.	144	...	...	...	...	G	DEC. 26	04 P.M. AST
DEC. 27	18	24	19.4	63.06 N.	149.23 W.	75	...	...	...	...	G	DEC. 27	08 A.M. AST
DEC. 28	19	40	02.7	61.58 N.	146.40 W.	53	3.9	...	4.4M	III	G	DEC. 28	09 A.M. AST
DEC. 29	04	34	19.8	64.02 N.	149.76 W.	14	...	...	3.5M	...	G	DEC. 28	06 P.M. AST
DEC. 30	10	09	16.3	63.25 N.	151.84 W.	89	...	...	...	...	G	DEC. 30	00 A.M. AST
DEC. 31	02	58	41.4	60.01 N.	152.07 W.	62	...	...	...	...	G	DEC. 30	04 P.M. AST
DEC. 31	07	22	17.9	67.66 N.	161.24 W.	33N	...	...	...	...	G	DEC. 30	08 P.M. BST
DEC. 31	11	04	03.6	67.81 N.	161.35 W.	33N	4.5	...	5.0M	...	G	DEC. 31	00 A.M. BST
DEC. 31	14	44	20.5	63.13 N.	150.80 W.	166	...	...	...	...	G	DEC. 31	04 A.M. AST
ARIZONA													
JAN. 7	16	21	45.4	36.95 N.	112.88 W.	10	...	...	2.9G	FELT	U	JAN. 7	09 A.M. MST
FEB. 11	02	50	39.7	36.98 N.	113.98 W.	1	...	...	2.9U	...	U	FEB. 10	07 P.M. MST
NOV. 1	23	14	21.8	36.03 N.	114.38 W.	5	...	...	3.3G	IV	G	NOV. 1	03 P.M. PST
NOV. 19	20	57	34.6	36.03 N.	112.01 W.	5	...	...	3.0G	FELT	G	NOV. 19	01 P.M. MST
ARKANSAS													
JAN. 18	01	23	07.3	35.19 N.	92.25 W.	2	...	...	3.0T	FELT	K	JAN. 17	07 P.M. CST
JAN. 18	02	32	12.6	35.19 N.	92.26 W.	2	...	...	3.1T	IV	K	JAN. 17	08 P.M. CST
JAN. 18	09	32	59.3	35.19 N.	92.26 W.	2	...	...	2.6K	...	K	JAN. 18	03 A.M. CST
JAN. 19	04	39	49.5	35.19 N.	92.25 W.	1	...	...	3.5T	IV	K	JAN. 18	10 P.M. CST
JAN. 20	14	01	30.7	35.20 N.	92.21 W.	0	...	...	3.5T	IV	K	JAN. 20	08 A.M. CST
JAN. 21	00	33	54.8	35.18 N.	92.21 W.	3	4.5	...	4.7T	VI	K	JAN. 20	06 P.M. CST
JAN. 21	00	37	35.6	35.16 N.	92.24 W.	1	...	...	3.0K	FELT	K	JAN. 20	06 P.M. CST
JAN. 21	01	13	38.7	35.14 N.	92.23 W.	9	...	...	3.1T	FELT	K	JAN. 20	07 P.M. CST
JAN. 21	02	56	39.2	35.15 N.	92.21 W.	1	...	...	2.8K	...	K	JAN. 20	08 P.M. CST
JAN. 21	03	15	28.9	35.16 N.	92.21 W.	3	...	...	2.6K	FELT	K	JAN. 20	09 P.M. CST
JAN. 21	03	27	39.4	35.18 N.	92.22 W.	7	...	...	2.7K	...	K	JAN. 20	11 P.M. CST
JAN. 21	11	53	53.6	35.15 N.	92.21 W.	6	...	...	2.8K	FELT	K	JAN. 21	05 A.M. CST
JAN. 21	12	03	01.8	35.20 N.	92.21 W.	0	...	...	2.9K	FELT	K	JAN. 21	06 A.M. CST
JAN. 21	13	00	11.7	35.21 N.	92.22 W.	1	...	...	2.8K	...	K	JAN. 21	07 A.M. CST
JAN. 21	14	09	12.7	35.19 N.	92.21 W.	0	...	...	2.7K	...	K	JAN. 21	08 A.M. CST
JAN. 21	15	45	38.6	35.19 N.	92.20 W.	4	...	...	4.1T	III	K	JAN. 21	09 A.M. CST
JAN. 21	15	48	26.8	35.21 N.	92.22 W.	0	...	...	2.7K	FELT	K	JAN. 21	09 A.M. CST
JAN. 22	08	47	54.8	35.23 N.	92.22 W.	1	...	...	2.7K	...	K	JAN. 22	02 A.M. CST
JAN. 22	23	54	22.8	35.22 N.	92.21 W.	0	...	...	3.9T	FELT	K	JAN. 22	05 P.M. CST
JAN. 24	03	22	44.7	35.20 N.	92.22 W.	4	...	...	4.0T	V	K	JAN. 23	09 P.M. CST
JAN. 27	23	29	42.2	35.20 N.	92.22 W.	1	...	...	3.2T	III	K	JAN. 27	05 P.M. CST
JAN. 28	21	55	08.2	35.18 N.	92.23 W.	5	...	...	2.3T	FELT	K	JAN. 28	03 P.M. CST
FEB. 1	05	55	08.2	35.18 N.	92.23 W.	5	...	...	3.3T	IV	K	JAN. 31	11 P.M. CST
FEB. 1	07	25	02.6	35.19 N.	92.22 W.	7	...	...	3.4T	IV	K	FEB. 1	01 A.M. CST
FEB. 2	09	26	46.2	35.91 N.	90.05 W.	12	...	...	3.5T	IV	S	FEB. 2	03 A.M. CST
FEB. 3	06	24	46.6	35.19 N.	92.23 W.	3	...	...	2.6K	FELT	K	FEB. 3	00 A.M. CST
FEB. 12	05	32	12.2	35.18 N.	92.23 W.	3	...	...	3.0T	IV	K	FEB. 11	11 P.M. CST
FEB. 16	12	38	20.5	35.19 N.	92.23 W.	5	...	...	2.7K	IV	K	FEB. 16	06 A.M. CST
FEB. 24	19	27	14.1	35.20 N.	92.24 W.	5	...	...	4.0T	V	K	FEB. 24	01 P.M. CST
MAR. 1	00	12	09.5	35.19 N.	92.21 W.	8	...	...	3.9T	V	K	FEB. 28	06 P.M. CST
MAR. 1	06	04	09.1	35.20 N.	92.23 W.	6	...	...	2.7K	FELT	K	MAR. 1	00 A.M. CST
MAR. 9	16	01	42.3	35.19 N.	92.23 W.	6	...	...	2.8K	...	K	MAR. 9	10 A.M. CST
MAR. 10	03	01	42.6	35.20 N.	92.22 W.	7	...	...	2.6K	FELT	K	MAR. 9	11 P.M. CST
MAY 31	17	49	20.4	35.19 N.	92.20 W.	1	...	...	3.6G	IV	K	MAY 31	11 A.M. CST
MAY 31	18	21	19.8	35.20 N.	92.23 W.	2	...	...	3.6T	IV	K	MAY 31	12 P.M. CST
JUNE 4	21	23	37.9	35.22 N.	92.21 W.	1	...	...	2.6K	FELT	K	JUNE 4	03 P.M. CST
JUNE 12	15	00	27.6	35.20 N.	92.26 W.	4	...	...	2.9K	IV	K	JUNE 12	09 A.M. CST
JUNE 26	15	56	05.7	35.19 N.	92.24 W.	5	...	...	3.0K	FELT	K	JUNE 26	09 A.M. CST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
ARKANSAS--Continued													
JUNE 30	16	21	55.4	35.19 N.	92.23 W.	7	...	...	3.2K	FELT	K	JUNE 30	08 A.M. CST
JULY 5	03	07	44.6	35.19 N.	92.23 W.	5	...	...	2.6T	FELT	K	JULY 4	09 P.M. CST
JULY 5	04	13	49.8	35.18 N.	92.23 W.	6	...	...	3.8T	FELT	K	JULY 4	10 P.M. CST
JULY 13	04	30	53.1	35.99 N.	89.86 W.	13	...	...	2.6G	III	S	JULY 12	10 P.M. CST
AUG. 9	11	12	31.6	35.19 N.	92.24 W.	4	...	...	3.2T	FELT	K	AUG. 9	05 A.M. CST
SEPT. 25	23	17	05.5	35.21 N.	92.23 W.	5	...	...	3.5T	FELT	K	SEPT. 25	05 P.M. CST
SEPT. 27	10	22	32.5	35.19 N.	92.23 W.	5	...	...	3.1G	III	K	SEPT. 27	04 A.M. CST
SEPT. 27	17	17	12.3	35.03 N.	92.22 W.	2	...	...	2.7K	FELT	K	SEPT. 27	11 P.M. CST
OCT. 29	19	27	39.2	35.21 N.	92.21 W.	1	...	...	2.8K	III	K	OCT. 29	01 P.M. CST
NOV. 12	00	39	39.3	35.20 N.	92.21 W.	3	...	...	2.6K	FELT	K	NOV. 11	07 P.M. CST
NOV. 17	19	00	43.2	35.20 N.	92.23 W.	1	...	...	2.7K	FELT	K	NOV. 17	08 A.M. CST
NOV. 21	16	27	39.4	35.20 N.	92.24 W.	5	...	...	2.9T	III	K	NOV. 21	10 A.M. CST
NOV. 21	16	35	28.6	35.21 N.	92.22 W.	1	...	...	3.4T	IV	K	NOV. 21	10 A.M. CST
NOV. 21	18	42	39.8	35.20 N.	92.21 W.	1	...	...	2.6K	...	K	NOV. 21	12 P.M. CST
DEC. 22	20	47	16.8	35.20 N.	92.20 W.	1	...	...	2.8K	FELT	K	DEC. 22	03 P.M. CST
CALIFORNIA													
JAN. 3	00	37	32.1	33.90 N.	117.97 W.	13	...	...	2.8P	FELT	P	JAN. 2	04 P.M. PST
JAN. 5	03	26	57.0	39.85 N.	120.57 W.	23	...	...	3.9B	IV	B	JAN. 4	07 P.M. PST
JAN. 7	07	18	59.8	37.58 N.	118.83 W.	10	...	...	3.4B	...	B	JAN. 6	11 P.M. PST
JAN. 15	12	25	54.9	33.99 N.	119.13 W.	3	...	...	3.1P	...	P	JAN. 15	04 A.M. PST
JAN. 19	05	35	38.0	33.92 N.	118.48 W.	5	...	...	2.5P	FELT	P	JAN. 18	09 P.M. PST
JAN. 19	07	13	09.3	37.84 N.	122.25 W.	10	...	...	3.0B	V	B	JAN. 18	11 P.M. PST
JAN. 23	11	04	29.6	37.47 N.	119.40 W.	6	...	...	3.0P	...	P	JAN. 23	03 A.M. PST
JAN. 24	15	44	07.7	37.37 N.	117.85 W.	23	...	...	4.3B	III	B	JAN. 24	07 A.M. PST
JAN. 25	23	47	03.5	33.24 N.	116.10 W.	10	...	...	3.1P	...	P	JAN. 25	03 P.M. PST
JAN. 27	23	42	02.3	37.00 N.	121.71 W.	8	...	...	3.0B	II	B	JAN. 27	03 P.M. PST
FEB. 2	05	40	56.6	33.47 N.	116.45 W.	7	...	...	3.4P	...	P	FEB. 1	09 P.M. PST
FEB. 2	18	00	04.9	33.75 N.	119.23 W.	10	...	...	3.6P	FELT	P	FEB. 2	10 A.M. PST
FEB. 4	00	07	21.2	32.98 N.	115.76 W.	5	...	...	3.2P	...	P	FEB. 3	04 P.M. PST
FEB. 7	08	10	20.8	35.36 N.	118.48 W.	11	...	...	3.8P	IV	P	FEB. 7	00 A.M. PST
FEB. 7	12	27	15.4	38.78 N.	122.71 W.	4	...	...	2.9B	FELT	B	FEB. 7	04 A.M. PST
FEB. 8	23	53	28.6	34.25 N.	118.41 W.	7	...	...	2.6P	FELT	P	FEB. 8	03 P.M. PST
FEB. 9	10	58	32.0	36.66 N.	121.34 W.	4	...	...	3.0B	...	B	FEB. 9	02 A.M. PST
FEB. 9	15	24	06.5	40.54 N.	124.40 W.	23	...	...	3.6B	FELT	B	FEB. 9	07 A.M. PST
FEB. 10	14	35	13.3	35.03 N.	119.12 W.	12	...	...	3.0P	...	P	FEB. 10	06 A.M. PST
FEB. 11	08	16	33.2	36.82 N.	121.28 W.	4	...	...	3.2B	FELT	B	FEB. 11	00 A.M. PST
FEB. 11	08	26	03.6	40.58 N.	124.37 W.	19	...	...	3.3B	...	B	FEB. 11	00 A.M. PST
FEB. 14	00	33	00.5	37.17 N.	117.82 W.	6	...	...	3.2P	...	P	FEB. 13	04 P.M. PST
FEB. 16	01	42	17.3	36.82 N.	121.59 W.	3	...	...	3.0B	II	B	FEB. 15	05 P.M. PST
FEB. 16	04	19	00.0	37.50 N.	118.79 W.	9	...	...	3.2B	...	B	FEB. 15	08 P.M. PST
FEB. 16	09	01	53.3	36.81 N.	121.58 W.	5	...	...	3.0B	...	B	FEB. 16	01 A.M. PST
FEB. 16	19	10	51.1	34.11 N.	117.33 W.	19	...	...	3.1P	II	P	FEB. 16	11 A.M. PST
FEB. 17	16	27	40.9	37.63 N.	118.93 W.	2	...	...	3.2B	...	B	FEB. 17	08 A.M. PST
FEB. 18	05	06	06.8	35.80 N.	117.73 W.	6	...	...	3.6P	FELT	P	FEB. 17	09 P.M. PST
FEB. 19	01	24	58.3	35.77 N.	117.73 W.	6	...	...	3.2P	...	P	FEB. 18	05 P.M. PST
FEB. 19	04	53	15.7	39.91 N.	120.73 W.	10	...	...	4.0B	V	B	FEB. 18	08 P.M. PST
FEB. 20	17	52	06.7	35.78 N.	117.72 W.	6	...	...	3.7P	III	P	FEB. 20	09 A.M. PST
FEB. 21	15	56	13.9	33.43 N.	118.92 W.	10	...	...	3.2P	...	P	FEB. 21	07 A.M. PST
FEB. 22	09	03	03.5	34.12 N.	116.39 W.	4	...	...	3.0P	FELT	P	FEB. 22	01 A.M. PST
FEB. 22	14	06	08.2	34.12 N.	116.39 W.	5	...	...	3.2P	FELT	P	FEB. 22	06 A.M. PST
FEB. 24	16	46	50.6	36.19 N.	117.91 W.	3	...	...	3.0P	...	P	FEB. 24	08 A.M. PST
FEB. 25	05	19	42.2	34.11 N.	116.39 W.	4	...	...	3.8P	V	P	FEB. 24	09 P.M. PST
FEB. 26	13	30	15.8	33.45 N.	118.93 W.	6	...	...	3.5P	...	P	FEB. 26	05 A.M. PST
FEB. 28	20	17	51.5	38.79 N.	122.77 W.	5	...	...	3.3B	FELT	B	FEB. 28	12 P.M. PST
FEB. 28	23	18	20.0	34.47 N.	119.50 W.	3	...	...	3.4P	FELT	P	FEB. 28	03 P.M. PST
MAR. 1	03	03	33.0	35.78 N.	117.74 W.	9	...	...	3.3P	...	P	FEB. 28	07 P.M. PST
MAR. 1	03	10	22.3	35.78 N.	117.75 W.	4	4.1	...	4.2P	V	P	FEB. 28	07 P.M. PST
MAR. 1	03	19	11.8	35.77 N.	117.75 W.	3	...	...	3.0P	...	P	FEB. 28	07 P.M. PST
MAR. 1	06	09	23.6	35.77 N.	117.75 W.	6	...	...	3.6P	...	P	FEB. 28	10 P.M. PST
MAR. 1	13	43	36.8	35.77 N.	117.73 W.	5	...	...	3.2P	...	P	MAR. 1	05 A.M. PST
MAR. 4	04	36	24.0	33.18 N.	116.12 W.	10	...	...	3.0P	...	P	MAR. 3	08 P.M. PST
MAR. 4	20	58	35.8	40.13 N.	121.23 W.	1	...	...	3.1B	...	B	MAR. 4	12 P.M. PST
MAR. 5	15	22	40.4	33.03 N.	116.52 W.	15	...	...	3.0P	...	P	MAR. 5	07 A.M. PST
MAR. 6	13	11	14.0	37.05 N.	121.47 W.	7	...	...	3.0B	FELT	B	MAR. 6	05 A.M. PST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
CALIFORNIA--Continued													
MAR. 7	19	13	38.2	35.76 N.	117.74 W.	4	...	...	3.0P	FELT	P	MAR. 7	11 A.M. PST
MAR. 7	20	50	12.8	35.76 N.	117.75 W.	2	4.3	...	4.3P	V	P	MAR. 7	12 P.M. PST
MAR. 7	20	50	59.9	35.76 N.	117.76 W.	2	4.7	...	4.5P	V	P	MAR. 7	12 P.M. PST
MAR. 7	22	20	34.2	35.77 N.	117.75 W.	2	...	...	3.3P	FELT	P	MAR. 7	02 P.M. PST
MAR. 8	05	10	22.2	35.78 N.	117.75 W.	0	...	...	3.0P	FELT	P	MAR. 7	09 P.M. PST
MAR. 8	08	45	24.8	35.77 N.	117.76 W.	3	...	...	3.0P	FELT	P	MAR. 8	00 A.M. PST
MAR. 8	12	15	05.1	35.78 N.	117.75 W.	4	...	...	3.6P	FELT	P	MAR. 8	04 A.M. PST
MAR. 8	14	42	46.0	35.75 N.	117.73 W.	4	...	...	4.0P	IV	P	MAR. 8	06 A.M. PST
MAR. 11	12	29	24.0	32.90 N.	115.49 W.	10	...	...	2.3P	FELT	P	MAR. 11	04 A.M. PST
MAR. 12	12	45	33.3	33.43 N.	118.91 W.	6	...	...	3.5P	...	P	MAR. 12	04 A.M. PST
MAR. 12	23	07	45.1	37.11 N.	121.52 W.	5	...	...	2.7B	FELT	B	MAR. 12	03 P.M. PST
MAR. 14	09	58	51.2	35.19 N.	120.63 W.	5	...	...	3.5B	V	B	MAR. 14	01 A.M. PST
MAR. 16	07	08	13.1	36.60 N.	117.06 W.	6	...	...	3.5P	FELT	P	MAR. 15	11 P.M. PST
MAR. 16	08	47	00.8	36.60 N.	117.03 W.	6	...	...	4.1P	FELT	P	MAR. 16	00 A.M. PST
MAR. 16	11	52	46.4	39.59 N.	123.06 W.	2	...	...	3.2B	IV	B	MAR. 16	03 A.M. PST
MAR. 16	12	06	10.0	39.61 N.	123.06 W.	2	...	...	2.8B	III	B	MAR. 16	04 A.M. PST
MAR. 16	22	55	05.6	32.78 N.	115.46 W.	11	...	...	3.1P	FELT	P	MAR. 16	02 P.M. PST
MAR. 17	09	32	03.3	40.40 N.	124.15 W.	25	...	...	3.6B	IV	B	MAR. 17	01 A.M. PST
MAR. 18	12	11	28.1	37.54 N.	118.89 W.	6	...	...	3.2B	...	B	MAR. 18	04 A.M. PST
MAR. 20	18	39	43.8	38.82 N.	122.82 W.	5	...	...	2.8B	FELT	B	MAR. 20	10 A.M. PST
MAR. 22	08	53	28.6	33.06 N.	116.21 W.	5	4.4	...	4.5P	IV	P	MAR. 22	00 A.M. PST
MAR. 22	09	02	02.4	33.07 N.	116.21 W.	9	...	...	3.1P	...	P	MAR. 22	01 A.M. PST
MAR. 22	12	10	03.4	39.87 N.	122.63 W.	13	...	...	3.1B	...	B	MAR. 22	04 A.M. PST
MAR. 22	23	26	23.9	33.06 N.	116.21 W.	5	...	...	3.2P	...	P	MAR. 22	03 P.M. PST
MAR. 24	04	20	31.3	38.48 N.	122.64 W.	5	...	...	3.0B	IV	B	MAR. 23	08 P.M. PST
MAR. 25	02	27	32.5	38.80 N.	122.80 W.	2	...	...	3.4B	IV	B	MAR. 24	06 P.M. PST
MAR. 26	13	24	00.5	37.80 N.	122.21 W.	4	...	...	3.0B	IV	B	MAR. 26	05 A.M. PST
MAR. 28	13	50	31.1	37.80 N.	122.20 W.	2	...	...	2.9B	III	B	MAR. 28	05 A.M. PST
MAR. 29	20	08	27.0	32.98 N.	115.91 W.	5	...	...	3.7P	...	P	MAR. 29	12 P.M. PST
MAR. 29	23	29	41.6	34.11 N.	116.39 W.	4	...	...	3.4P	III	P	MAR. 29	03 P.M. PST
MAR. 30	01	24	45.9	37.85 N.	121.78 W.	15	...	...	3.1B	...	B	MAR. 29	05 P.M. PST
MAR. 31	20	02	23.9	35.72 N.	118.40 W.	9	...	...	2.9P	FELT	P	MAR. 31	12 P.M. PST
MAR. 31	21	30	09.8	40.53 N.	123.53 W.	1	...	...	3.5B	...	B	MAR. 31	01 P.M. PST
APR. 3	19	32	25.8	37.80 N.	122.20 W.	4	...	...	2.4B	FELT	B	APR. 3	11 A.M. PST
APR. 8	03	54	12.7	39.47 N.	123.33 W.	2	...	...	3.0B	IV	B	APR. 7	07 P.M. PST
APR. 8	15	03	04.0	34.19 N.	118.64 W.	4	...	...	2.6P	FELT	P	APR. 8	07 A.M. PST
APR. 9	15	36	46.0	37.60 N.	118.84 W.	10	...	...	3.1B	...	B	APR. 9	07 A.M. PST
APR. 11	02	49	40.6	41.02 N.	121.90 W.	2	...	...	3.4B	...	B	APR. 10	06 P.M. PST
APR. 11	05	30	29.0	36.62 N.	121.31 W.	8	...	...	3.4B	...	B	APR. 10	09 P.M. PST
APR. 11	21	45	26.9	40.69 N.	123.97 W.	24	...	...	3.1B	...	B	APR. 11	01 P.M. PST
APR. 12	20	21	54.8	38.50 N.	122.72 W.	4	...	...	2.5B	FELT	B	APR. 12	12 P.M. PST
APR. 13	04	36	22.7	40.97 N.	121.86 W.	8	...	...	3.0B	...	B	APR. 12	08 P.M. PST
APR. 13	11	02	12.2	34.05 N.	118.96 W.	17	4.2	...	4.0P	V	P	APR. 13	03 A.M. PST
APR. 13	15	00	42.2	33.91 N.	117.96 W.	12	...	...	2.2P	FELT	P	APR. 13	07 A.M. PST
APR. 21	21	19	30.4	35.01 N.	119.35 W.	6	...	...	3.2P	...	P	APR. 21	01 P.M. PST
APR. 24	00	17	47.5	35.77 N.	117.73 W.	4	...	...	3.3P	...	P	APR. 23	04 P.M. PST
APR. 24	14	35	44.7	36.84 N.	121.41 W.	10	...	...	3.1B	FELT	B	APR. 24	06 A.M. PST
APR. 25	02	59	35.5	37.42 N.	121.76 W.	8	...	...	3.1B	FELT	B	APR. 24	06 P.M. PST
APR. 25	04	13	26.0	35.77 N.	117.73 W.	5	3.7	...	4.0P	...	P	APR. 24	08 P.M. PST
APR. 25	15	56	08.8	32.95 N.	115.55 W.	15	...	...	2.4P	FELT	P	APR. 25	07 A.M. PST
APR. 26	20	49	23.9	35.77 N.	117.73 W.	5	...	...	3.2P	...	P	APR. 26	12 P.M. PST
APR. 27	15	42	40.2	35.77 N.	117.73 W.	5	...	...	4.0P	IV	P	APR. 27	07 A.M. PST
APR. 27	17	34	01.0	35.77 N.	117.73 W.	7	...	...	3.1P	...	P	APR. 27	09 A.M. PST
APR. 30	06	43	37.0	34.91 N.	120.36 W.	2	...	...	3.8P	IV	P	APR. 29	10 P.M. PST
MAY 1	14	29	39.7	35.77 N.	117.73 W.	5	...	...	3.0P	...	P	MAY 1	06 A.M. PST
MAY 2	07	19	42.3	35.77 N.	117.74 W.	4	...	...	3.3P	...	P	MAY 1	11 P.M. PST
MAY 2	13	37	53.9	37.05 N.	121.48 W.	5	...	...	3.1B	FELT	B	MAY 2	05 A.M. PST
MAY 3	03	34	29.0	36.94 N.	121.43 W.	6	...	...	3.1B	...	B	MAY 2	07 P.M. PST
MAY 3	08	23	59.0	33.95 N.	118.76 W.	14	...	...	3.2P	...	P	MAY 3	00 A.M. PST
MAY 4	05	29	10.2	36.83 N.	121.60 W.	2	...	...	2.9B	FELT	B	MAY 3	09 P.M. PST
MAY 6	11	05	26.9	36.55 N.	121.19 N.	4	...	...	3.1B	FELT	B	MAY 6	03 A.M. PST
MAY 6	16	37	43.5	36.01 N.	117.83 W.	5	...	...	3.1P	...	P	MAY 6	08 A.M. PST
MAY 7	12	17	41.7	37.66 N.	118.90 W.	5	...	...	3.2B	IV	G	MAY 7	04 A.M. PST
MAY 7	12	29	53.7	37.65 N.	118.97 W.	2	...	...	3.3B	FELT	B	MAY 7	04 A.M. PST
MAY 7	12	44	38.8	37.65 N.	118.94 W.	5	...	...	3.0G	FELT	G	MAY 7	04 A.M. PST
MAY 7	15	43	32.2	35.76 N.	117.73 W.	7	...	...	3.2P	...	P	MAY 7	07 A.M. PST
MAY 7	22	26	34.3	35.63 N.	120.79 W.	24	...	...	3.1P	...	P	MAY 7	02 P.M. PST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
CALIFORNIA--Continued													
MAY 8	03	57	12.6	37.65 N.	118.94 W.	5	...	...	3.8B	FELT	B	MAY 7	07 P.M. PST
MAY 9	06	22	19.2	35.68 N.	118.10 W.	4	...	...	3.0P	...	P	MAY 8	10 P.M. PST
MAY 9	07	05	44.3	37.66 N.	118.97 W.	6	...	...	3.3B	...	B	MAY 8	11 P.M. PST
MAY 9	07	07	53.1	37.62 N.	118.92 W.	24	...	...	3.4B	...	B	MAY 8	11 P.M. PST
MAY 9	09	46	44.9	35.81 N.	117.75 W.	4	...	...	3.2P	...	P	MAY 9	01 A.M. PST
MAY 10	16	14	06.2	37.61 N.	118.93 W.	10	...	...	3.1B	...	B	MAY 10	08 A.M. PST
MAY 10	18	10	57.4	36.63 N.	121.28 W.	7	...	...	3.0B	...	B	MAY 10	10 A.M. PST
MAY 10	18	13	51.7	36.63 N.	121.28 W.	5	...	...	3.1B	...	B	MAY 10	10 A.M. PST
MAY 11	22	37	29.9	36.62 N.	121.29 W.	7	...	...	3.6B	FELT	B	MAY 11	02 P.M. PST
MAY 12	00	05	20.2	35.76 N.	117.73 W.	5	...	...	3.2P	...	P	MAY 11	04 P.M. PST
MAY 14	20	05	06.3	35.81 N.	117.75 W.	3	...	...	3.3P	...	P	MAY 14	12 P.M. PST
MAY 16	03	23	31.9	40.80 N.	123.70 W.	25	...	...	3.1B	...	B	MAY 15	07 P.M. PST
MAY 22	03	32	03.7	37.05 N.	121.48 W.	6	...	...	3.7B	II	B	MAY 21	07 P.M. PST
MAY 27	23	30	22.4	40.53 N.	124.37 W.	22	...	...	3.3B	...	B	MAY 27	03 P.M. PST
MAY 27	23	58	25.6	37.61 N.	118.85 W.	6	...	...	3.7P	...	P	MAY 27	03 P.M. PST
MAY 29	13	02	24.6	38.80 N.	122.82 W.	3	4.3	...	4.0B	V	B	MAY 29	05 A.M. PST
MAY 29	13	07	23.3	38.84 N.	122.83 W.	5	...	...	2.9B	FELT	B	MAY 29	05 A.M. PST
MAY 31	15	42	03.5	35.72 N.	118.40 W.	9	...	...	3.7P	FELT	P	MAY 31	07 A.M. PST
JUNE 1	01	57	11.1	35.72 N.	118.40 W.	7	...	...	3.1P	...	P	MAY 31	05 P.M. PST
JUNE 1	02	49	29.1	35.08 N.	119.02 W.	6	...	...	3.0P	...	P	MAY 31	06 P.M. PST
JUNE 4	03	12	50.1	39.72 N.	120.10 W.	12	...	...	3.3B	IV	B	JUNE 3	07 P.M. PST
JUNE 4	11	59	02.6	37.49 N.	118.33 W.	6	...	...	3.0G	IV	P	JUNE 4	03 A.M. PST
JUNE 4	16	41	48.5	37.48 N.	118.38 W.	5	...	...	4.3B	IV	B	JUNE 4	08 A.M. PST
JUNE 4	20	33	22.7	37.49 N.	118.34 W.	6	...	...	3.3P	...	P	JUNE 4	12 P.M. PST
JUNE 5	00	56	20.4	36.92 N.	121.68 W.	10	...	...	3.2B	...	B	JUNE 4	04 P.M. PST
JUNE 5	09	54	23.2	38.79 N.	119.81 W.	12	...	...	3.9B	IV	B	JUNE 5	01 A.M. PST
JUNE 6	07	00	09.4	39.51 N.	121.53 W.	10	...	...	2.8B	III	B	JUNE 5	11 P.M. PST
JUNE 8	20	05	35.8	35.76 N.	117.72 W.	5	...	...	3.4P	V	P	JUNE 8	12 P.M. PST
JUNE 9	01	57	20.0	34.85 N.	119.04 W.	8	...	...	3.1P	...	P	JUNE 8	05 P.M. PST
JUNE 9	03	27	09.2	33.94 N.	116.89 W.	14	...	...	3.2P	FELT	P	JUNE 8	07 P.M. PST
JUNE 13	00	04	35.2	37.02 N.	121.47 W.	6	...	...	3.1B	FELT	B	JUNE 12	04 P.M. PST
JUNE 14	20	29	18.5	38.78 N.	122.92 W.	5	...	...	3.0B	FELT	B	JUNE 14	12 P.M. PST
JUNE 14	23	53	22.7	36.51 N.	121.06 W.	8	...	...	3.1B	...	B	JUNE 14	03 P.M. PST
JUNE 15	23	49	21.3	33.56 N.	116.67 W.	12	4.5	...	4.8P	V	P	JUNE 15	03 P.M. PST
JUNE 15	23	56	05.1	33.56 N.	116.67 W.	11	...	...	3.0P	FELT	P	JUNE 15	03 P.M. PST
JUNE 16	00	03	55.7	33.55 N.	116.67 W.	13	...	...	3.1P	FELT	P	JUNE 15	04 P.M. PST
JUNE 16	00	14	52.3	33.55 N.	116.66 W.	13	...	...	3.5P	FELT	P	JUNE 15	04 P.M. PST
JUNE 16	00	38	19.6	36.52 N.	121.06 W.	9	...	...	3.2B	...	B	JUNE 15	04 P.M. PST
JUNE 16	03	16	06.2	33.91 N.	117.04 W.	13	...	...	3.2P	...	P	JUNE 15	07 P.M. PST
JUNE 16	11	20	18.4	33.55 N.	116.66 W.	12	...	...	3.2P	FELT	P	JUNE 16	03 A.M. PST
JUNE 19	10	17	33.6	36.51 N.	121.06 W.	9	...	...	4.1B	IV	B	JUNE 19	02 A.M. PST
JUNE 21	06	43	38.1	41.20 N.	121.92 W.	11	4.1	...	4.3B	IV	B	JUNE 20	10 P.M. PST
JUNE 21	08	58	23.7	41.19 N.	121.93 W.	12	...	...	3.4B	...	B	JUNE 21	00 A.M. PST
JUNE 22	01	05	27.5	37.55 N.	118.91 W.	2	...	...	3.5B	FELT	B	JUNE 21	05 P.M. PST
JUNE 22	04	19	37.4	34.89 N.	120.37 W.	6	...	...	2.9P	III	P	JUNE 21	08 P.M. PST
JUNE 23	11	22	26.1	40.34 N.	124.34 W.	5	...	...	3.3B	FELT	B	JUNE 23	03 A.M. PST
JUNE 24	10	08	01.1	37.46 N.	118.85 W.	3	...	...	3.8B	FELT	B	JUNE 24	02 A.M. PST
JUNE 25	03	58	23.6	35.94 N.	120.56 W.	9	4.1	3.7	4.0B	IV	B	JUNE 24	07 P.M. PST
JUNE 27	05	20	02.2	35.94 N.	120.54 W.	10	...	...	3.3B	FELT	B	JUNE 26	09 P.M. PST
JUNE 27	11	21	33.2	32.95 N.	116.43 W.	3	...	...	3.2P	...	P	JUNE 27	03 A.M. PST
JUNE 27	16	15	00.0	33.49 N.	116.46 W.	15	...	...	3.1P	...	P	JUNE 27	08 A.M. PST
JUNE 30	13	47	49.1	36.14 N.	118.27 W.	0	...	...	3.3P	...	P	JUNE 30	05 A.M. PST
JULY 4	12	44	03.4	35.77 N.	117.73 W.	8	...	...	3.8P	IV	P	JULY 4	04 A.M. PST
JULY 5	09	02	36.9	36.68 N.	121.36 W.	5	...	...	3.2B	...	B	JULY 5	01 A.M. PST
JULY 7	08	44	33.7	34.15 N.	116.70 W.	11	...	...	3.6P	FELT	P	JULY 7	00 A.M. PST
JULY 12	01	06	26.2	34.11 N.	116.40 W.	4	...	...	3.3P	...	P	JULY 11	05 P.M. PST
JULY 18	01	28	19.7	40.00 N.	122.62 W.	6	...	...	3.2B	...	B	JULY 17	05 P.M. PST
JULY 18	10	16	41.5	36.89 N.	121.49 W.	10	...	...	3.5B	FELT	B	JULY 18	02 A.M. PST
JULY 18	11	25	50.9	33.83 N.	117.83 W.	8	...	...	3.0P	IV	P	JULY 18	03 A.M. PST
JULY 18	22	45	24.3	40.00 N.	122.61 W.	13	...	...	3.7B	FELT	B	JULY 18	02 P.M. PST
JULY 21	09	28	18.1	35.41 N.	119.39 W.	6	...	...	3.2P	...	P	JULY 21	01 A.M. PST
JULY 23	21	09	16.7	34.53 N.	116.49 W.	8	...	...	3.0P	...	P	JULY 23	01 P.M. PST
JULY 29	02	15	29.0	34.08 N.	119.01 W.	12	...	...	3.0P	...	P	JULY 28	06 P.M. PST
JULY 29	05	50	08.6	33.95 N.	118.72 W.	11	...	...	3.2P	V	P	JULY 28	09 P.M. PST
JULY 31	00	57	58.4	35.76 N.	117.73 W.	5	...	...	3.2P	...	P	JULY 30	04 P.M. PST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
CALIFORNIA--Continued													
AUG. 1	09	43	41.9	39.61 N.	122.76 W.	11	...	...	3.0B	...	B	AUG. 1	01 A.M. PST
AUG. 3	16	38	05.3	33.26 N.	116.42 W.	3	...	...	3.8P	...	P	AUG. 3	08 A.M. PST
AUG. 4	15	41	31.5	38.92 N.	122.67 W.	6	...	...	3.0B	V	B	AUG. 4	07 A.M. PST
AUG. 5	04	02	19.8	33.26 N.	116.42 W.	3	...	...	3.5P	FELT	P	AUG. 4	08 P.M. PST
AUG. 5	06	09	38.6	37.51 N.	118.88 W.	6	...	...	3.0B	...	B	AUG. 4	10 P.M. PST
AUG. 5	06	10	09.7	37.56 N.	118.95 W.	5	...	...	3.1B	...	G	AUG. 4	10 P.M. PST
AUG. 5	15	38	31.0	37.63 N.	118.91 W.	1	...	...	3.4B	FELT	B	AUG. 5	07 A.M. PST
AUG. 6	21	29	05.2	40.87 N.	121.59 W.	9	...	...	3.0B	...	B	AUG. 6	01 P.M. PST
AUG. 7	04	40	18.5	40.88 N.	121.53 W.	8	...	...	3.2B	...	B	AUG. 6	08 P.M. PST
AUG. 8	23	30	56.5	38.10 N.	118.92 W.	14	...	...	3.7B	...	B	AUG. 8	03 P.M. PST
AUG. 10	02	11	29.8	36.59 N.	121.24 W.	7	3.9	...	4.5B	IV	B	AUG. 9	06 P.M. PST
AUG. 10	02	24	00.3	36.60 N.	121.26 W.	6	...	...	3.4B	III	B	AUG. 9	06 P.M. PST
AUG. 10	08	23	48.1	36.59 N.	121.25 W.	6	...	...	3.0B	...	B	AUG. 10	00 A.M. PST
AUG. 10	18	37	04.2	32.92 N.	115.53 W.	15	...	...	3.6P	IV	P	AUG. 10	10 A.M. PST
AUG. 11	07	46	43.2	36.63 N.	121.31 W.	9	4.6	...	4.6B	V	B	AUG. 10	11 P.M. PST
AUG. 12	06	53	05.8	36.62 N.	121.29 W.	10	...	...	3.4B	...	B	AUG. 11	10 P.M. PST
AUG. 12	15	51	37.2	36.70 N.	121.25 W.	5	...	...	3.1B	...	B	AUG. 12	07 A.M. PST
AUG. 14	02	37	59.1	34.17 N.	117.34 W.	5	...	...	3.2P	IV	P	AUG. 13	06 P.M. PST
AUG. 14	05	13	50.2	35.00 N.	118.51 W.	10	...	...	3.7P	...	P	AUG. 13	09 P.M. PST
AUG. 14	10	37	56.9	40.21 N.	120.37 W.	22	...	...	3.2B	...	B	AUG. 14	02 A.M. PST
AUG. 15	18	58	10.8	37.48 N.	118.90 W.	5	...	...	3.6B	FELT	B	AUG. 15	10 A.M. PST
AUG. 15	22	55	29.4	33.40 N.	116.43 W.	11	...	...	3.0P	...	P	AUG. 15	02 P.M. PST
AUG. 18	08	43	49.8	37.02 N.	121.73 W.	11	4.3	...	4.5B	V	B	AUG. 18	00 A.M. PST
AUG. 19	09	24	46.5	40.20 N.	124.48 W.	10	...	...	3.0B	...	G	AUG. 19	01 A.M. PST
AUG. 19	11	04	19.1	37.69 N.	121.95 W.	8	...	...	2.9B	III	B	AUG. 19	03 A.M. PST
AUG. 21	10	20	42.4	33.25 N.	116.42 W.	2	...	...	3.4P	FELT	P	AUG. 21	02 A.M. PST
AUG. 21	14	31	26.4	37.68 N.	121.95 W.	8	...	...	3.3B	FELT	B	AUG. 21	06 A.M. PST
AUG. 22	04	25	17.3	37.49 N.	118.87 W.	5	...	...	3.6B	FELT	B	AUG. 21	08 P.M. PST
AUG. 23	22	34	42.0	37.45 N.	118.86 W.	10	...	...	3.4B	...	B	AUG. 23	02 P.M. PST
AUG. 24	07	27	35.4	37.54 N.	118.85 W.	2	...	...	3.4B	FELT	B	AUG. 23	11 P.M. PST
AUG. 24	22	33	36.8	37.46 N.	121.82 W.	6	...	...	3.9B	V	B	AUG. 24	02 P.M. PST
AUG. 26	19	39	08.4	37.60 N.	118.82 W.	6	...	...	3.9B	FELT	B	AUG. 26	11 A.M. PST
AUG. 26	20	36	53.2	37.62 N.	118.82 W.	4	...	...	3.0P	...	P	AUG. 26	12 P.M. PST
AUG. 26	22	28	03.1	33.27 N.	115.99 W.	4	...	...	3.5P	FELT	P	AUG. 26	02 P.M. PST
AUG. 27	04	25	37.6	33.93 N.	117.82 W.	17	...	...	3.4P	V	P	AUG. 26	08 P.M. PST
AUG. 28	01	03	11.3	37.85 N.	121.76 W.	12	...	...	3.8B	V	B	AUG. 27	05 P.M. PST
AUG. 28	08	26	55.3	38.73 N.	118.72 W.	5	...	...	3.6B	...	G	AUG. 28	00 A.M. PST
AUG. 29	05	02	34.8	37.37 N.	118.46 W.	16	...	...	3.7B	IV	B	AUG. 28	09 P.M. PST
AUG. 31	03	11	07.8	36.64 N.	121.33 W.	7	...	...	4.0B	FELT	B	AUG. 30	07 P.M. PST
AUG. 31	15	34	50.4	33.26 N.	116.68 W.	4	...	...	3.0P	...	P	AUG. 31	07 A.M. PST
SEPT. 1	01	36	34.6	36.63 N.	121.31 W.	8	...	...	3.0B	...	B	AUG. 31	05 P.M. PST
SEPT. 1	10	47	43.0	32.80 N.	117.45 W.	6	...	...	3.0P	...	P	SEPT. 1	02 A.M. PST
SEPT. 3	11	11	06.1	33.27 N.	116.41 W.	4	...	...	2.6P	FELT	P	SEPT. 3	03 A.M. PST
SEPT. 3	18	58	24.4	39.63 N.	122.52 W.	9	4.3	...	4.0B	IV	B	SEPT. 3	10 A.M. PST
SEPT. 5	05	21	26.6	32.93 N.	115.85 W.	4	3.7	...	4.4P	IV	P	SEPT. 4	09 P.M. PST
SEPT. 5	06	27	39.8	33.46 N.	116.89 W.	3	...	...	3.0P	...	P	SEPT. 4	10 P.M. PST
SEPT. 6	15	12	09.6	32.94 N.	115.85 W.	6	...	...	3.3P	...	P	SEPT. 6	07 A.M. PST
SEPT. 7	21	38	34.1	36.64 N.	121.33 W.	5	...	...	3.2B	...	B	SEPT. 7	01 P.M. PST
SEPT. 8	04	39	13.1	36.66 N.	121.33 W.	5	...	...	3.1B	...	B	SEPT. 7	08 P.M. PST
SEPT. 8	11	54	58.6	36.65 N.	121.33 W.	4	...	...	3.3B	...	B	SEPT. 8	03 A.M. PST
SEPT. 8	12	11	38.4	36.64 N.	121.33 W.	6	...	...	3.4B	...	B	SEPT. 8	04 A.M. PST
SEPT. 8	18	07	05.0	37.47 N.	118.87 W.	6	...	...	3.5B	FELT	B	SEPT. 8	10 A.M. PST
SEPT. 8	18	42	19.1	37.50 N.	118.86 W.	6	...	...	3.8B	FELT	B	SEPT. 8	10 A.M. PST
SEPT. 8	19	00	11.0	37.50 N.	118.85 W.	6	...	...	3.0P	...	P	SEPT. 8	11 A.M. PST
SEPT. 9	23	39	15.9	37.47 N.	118.86 W.	5	...	...	3.4B	...	B	SEPT. 9	03 P.M. PST
SEPT. 11	11	59	32.4	37.41 N.	121.77 W.	8	...	...	3.1B	FELT	B	SEPT. 11	03 A.M. PST
SEPT. 11	13	55	31.6	33.81 N.	118.23 W.	4	...	...	2.6P	FELT	P	SEPT. 11	05 A.M. PST
SEPT. 12	06	51	33.5	40.37 N.	123.11 W.	25	...	...	3.1B	...	B	SEPT. 11	10 P.M. PST
SEPT. 12	15	55	53.6	33.80 N.	118.20 W.	6	...	...	2.5P	FELT	P	SEPT. 12	07 A.M. PST
SEPT. 13	04	25	28.3	37.50 N.	118.86 W.	3	...	...	3.3P	...	P	SEPT. 12	08 P.M. PST
SEPT. 16	10	26	05.9	40.70 N.	124.06 W.	17	...	...	3.0B	III	B	SEPT. 16	02 A.M. PST
SEPT. 16	19	19	53.5	37.48 N.	118.81 W.	6	...	...	3.5P	...	P	SEPT. 16	11 A.M. PST
SEPT. 17	10	57	50.3	33.94 N.	118.31 W.	14	...	...	3.3P	FELT	P	SEPT. 17	02 A.M. PST
SEPT. 19	13	46	00.7	35.77 N.	117.73 W.	5	...	...	2.8P	FELT	P	SEPT. 19	05 A.M. PST
SEPT. 19	16	55	20.9	37.67 N.	118.85 W.	4	...	...	3.3B	...	B	SEPT. 19	08 A.M. PST
SEPT. 20	01	54	45.2	36.64 N.	121.30 W.	5	...	...	3.1B	...	B	SEPT. 19	05 P.M. PST
SEPT. 21	18	17	12.4	34.44 N.	119.79 W.	9	...	...	3.2P	IV	P	SEPT. 21	10 A.M. PST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
CALIFORNIA--Continued													
SEPT. 22	14	07	03.4	40.28 N.	121.39 W.	7	...	...	2.8B	...	B	SEPT. 22	06 A.M. PST
SEPT. 23	03	28	00.1	37.46 N.	118.83 W.	5	...	...	4.0B	FELT	B	SEPT. 22	07 P.M. PST
SEPT. 23	03	31	44.0	37.47 N.	118.82 W.	5	...	...	3.2B	...	B	SEPT. 22	07 P.M. PST
SEPT. 23	20	42	50.9	34.86 N.	120.32 W.	3	...	...	4.0P	V	P	SEPT. 23	12 P.M. PST
SEPT. 24	01	21	25.3	34.89 N.	120.37 W.	1	...	...	3.0P	...	P	SEPT. 23	05 P.M. PST
SEPT. 24	02	43	49.1	34.86 N.	120.38 W.	10	...	...	3.2P	...	P	SEPT. 23	06 P.M. PST
SEPT. 24	08	05	55.4	36.66 N.	121.34 W.	6	3.7	...	4.0B	IV	B	SEPT. 24	00 A.M. PST
SEPT. 24	08	11	22.0	36.66 N.	121.34 W.	5	...	...	3.1B	...	B	SEPT. 24	00 A.M. PST
SEPT. 24	08	11	53.4	36.66 N.	121.34 W.	5	...	...	3.1B	...	B	SEPT. 24	00 A.M. PST
SEPT. 25	04	20	04.9	36.67 N.	121.33 W.	5	...	...	3.8B	...	B	SEPT. 24	08 P.M. PST
SEPT. 25	18	42	06.3	36.65 N.	121.34 W.	5	...	...	3.4B	...	B	SEPT. 25	10 A.M. PST
SEPT. 25	20	38	10.4	33.28 N.	118.30 W.	1	...	...	3.4P	...	P	SEPT. 25	12 P.M. PST
SEPT. 25	21	01	12.1	36.65 N.	121.34 W.	6	...	...	3.0B	...	B	SEPT. 25	01 P.M. PST
SEPT. 25	21	01	22.4	36.66 N.	121.33 W.	6	...	...	3.4B	...	B	SEPT. 25	01 P.M. PST
SEPT. 25	21	31	17.4	36.66 N.	121.34 W.	6	...	...	3.2B	II	B	SEPT. 25	01 P.M. PST
SEPT. 25	23	29	46.0	36.36 N.	117.82 W.	5	...	...	3.5B	...	G	SEPT. 25	03 P.M. PST
SEPT. 26	05	20	37.0	34.91 N.	120.72 W.	6	...	...	3.0P	...	P	SEPT. 25	09 P.M. PST
SEPT. 28	00	41	49.2	37.49 N.	118.76 W.	13	...	...	4.3B	FELT	B	SEPT. 27	04 P.M. PST
SEPT. 28	01	29	48.6	37.49 N.	118.85 W.	6	...	...	3.1P	...	P	SEPT. 27	05 P.M. PST
SEPT. 28	03	32	19.8	37.46 N.	118.87 W.	5	...	...	3.6B	FELT	B	SEPT. 27	07 P.M. PST
SEPT. 28	03	37	25.5	37.47 N.	118.83 W.	2	...	...	3.7B	FELT	B	SEPT. 27	07 P.M. PST
SEPT. 28	10	43	51.4	35.75 N.	117.75 W.	5	...	...	3.5P	FELT	P	SEPT. 28	02 A.M. PST
SEPT. 28	17	35	05.0	35.74 N.	117.75 W.	9	...	...	3.1P	...	P	SEPT. 28	09 A.M. PST
SEPT. 29	18	19	16.1	35.75 N.	117.75 W.	6	...	...	3.9P	IV	P	SEPT. 29	10 A.M. PST
SEPT. 29	18	21	01.1	35.75 N.	117.75 W.	8	...	...	4.2P	V	P	SEPT. 29	10 A.M. PST
SEPT. 29	19	37	14.7	35.74 N.	117.75 W.	9	...	...	3.8P	...	P	SEPT. 29	11 A.M. PST
SEPT. 30	22	38	10.6	35.75 N.	117.75 W.	8	4.4	...	4.1P	V	P	SEPT. 30	02 P.M. PST
OCT. 1	06	24	58.7	35.74 N.	117.75 W.	4	...	...	3.1P	...	P	SEPT. 30	10 P.M. PST
OCT. 1	09	21	16.4	35.74 N.	117.75 W.	4	...	...	3.2P	...	P	OCT. 1	01 A.M. PST
OCT. 1	12	19	32.8	35.74 N.	117.75 W.	5	...	...	3.4P	...	P	OCT. 1	04 A.M. PST
OCT. 1	14	29	01.6	35.74 N.	117.75 W.	8	4.9	...	4.9P	VI	P	OCT. 1	06 A.M. PST
OCT. 1	14	33	06.4	35.70 N.	117.74 W.	4	...	...	3.2P	...	P	OCT. 1	06 A.M. PST
OCT. 1	14	37	15.9	35.76 N.	117.78 W.	6	...	...	3.2P	...	P	OCT. 1	06 A.M. PST
OCT. 1	14	38	19.2	35.71 N.	117.74 W.	4	...	...	3.0P	...	P	OCT. 1	06 A.M. PST
OCT. 1	17	14	42.1	35.75 N.	117.76 W.	8	...	...	3.7P	...	P	OCT. 1	09 A.M. PST
OCT. 1	17	34	41.2	35.75 N.	117.76 W.	8	...	...	3.0P	...	P	OCT. 1	09 A.M. PST
OCT. 1	20	01	26.3	35.75 N.	117.76 W.	8	...	...	3.3P	...	P	OCT. 1	12 P.M. PST
OCT. 1	20	45	55.4	35.74 N.	117.73 W.	6	...	...	3.8P	...	P	OCT. 1	12 P.M. PST
OCT. 1	20	46	03.4	35.75 N.	117.75 W.	6	...	...	3.8P	...	P	OCT. 1	12 P.M. PST
OCT. 1	21	06	20.8	35.73 N.	117.76 W.	5	...	...	3.1P	...	P	OCT. 1	01 P.M. PST
OCT. 1	21	14	13.3	35.73 N.	117.74 W.	5	...	...	3.3P	...	P	OCT. 1	01 P.M. PST
OCT. 1	22	10	21.9	35.72 N.	117.76 W.	7	4.5	...	4.5P	...	P	OCT. 1	02 P.M. PST
OCT. 1	22	10	31.3	35.76 N.	117.77 W.	5	...	...	4.3P	...	P	OCT. 1	02 P.M. PST
OCT. 1	22	11	28.8	35.72 N.	117.76 W.	7	4.3	...	4.1P	...	P	OCT. 1	02 P.M. PST
OCT. 2	09	33	05.9	37.88 N.	118.43 W.	5	...	...	3.7B	...	B	OCT. 2	01 A.M. PST
OCT. 2	11	52	15.6	37.47 N.	118.83 W.	5	...	...	3.7B	FELT	B	OCT. 2	03 A.M. PST
OCT. 2	14	01	56.4	35.81 N.	117.72 W.	6	...	...	3.7P	...	P	OCT. 2	06 A.M. PST
OCT. 2	16	01	21.1	35.75 N.	117.76 W.	8	...	...	3.7P	...	P	OCT. 2	08 A.M. PST
OCT. 3	05	56	34.6	35.74 N.	117.78 W.	10	...	...	3.0P	...	P	OCT. 2	09 P.M. PST
OCT. 3	09	47	42.9	35.81 N.	117.74 W.	5	...	...	3.2P	...	P	OCT. 3	01 A.M. PST
OCT. 4	08	35	21.1	35.73 N.	117.76 W.	6	...	...	3.1P	...	P	OCT. 4	00 A.M. PST
OCT. 4	18	43	28.5	35.75 N.	117.76 W.	8	...	...	4.0P	...	P	OCT. 4	10 A.M. PST
OCT. 4	21	06	24.2	35.74 N.	117.73 W.	5	...	...	3.0P	...	P	OCT. 4	01 P.M. PST
OCT. 6	10	38	16.3	35.42 N.	118.27 W.	2	...	...	3.5P	...	P	OCT. 6	02 A.M. PST
OCT. 6	11	38	40.5	35.77 N.	117.60 W.	4	...	...	3.1P	...	P	OCT. 6	03 A.M. PST
OCT. 6	11	55	29.3	35.77 N.	117.61 W.	4	...	...	3.0P	...	P	OCT. 6	03 A.M. PST
OCT. 7	15	50	05.0	35.71 N.	117.74 W.	5	...	...	3.2P	...	P	OCT. 7	07 A.M. PST
OCT. 7	17	54	36.0	35.74 N.	117.73 W.	10	3.8	...	3.8P	...	P	OCT. 7	09 A.M. PST
OCT. 7	22	45	01.8	35.75 N.	117.72 W.	9	...	...	3.1P	...	P	OCT. 7	02 P.M. PST
OCT. 8	09	42	59.1	37.52 N.	118.81 W.	5	...	...	3.1B	...	B	OCT. 8	01 A.M. PST
OCT. 10	05	11	25.7	37.49 N.	118.82 W.	11	...	...	3.0B	...	B	OCT. 9	09 P.M. PST
OCT. 12	01	21	29.7	36.28 N.	120.94 W.	2	...	...	3.0P	...	P	OCT. 11	05 P.M. PST
OCT. 12	08	22	46.7	35.81 N.	117.74 W.	8	...	...	3.7P	...	P	OCT. 12	00 A.M. PST
OCT. 12	17	32	31.9	35.81 N.	117.74 W.	9	...	...	3.1P	...	P	OCT. 12	09 A.M. PST
OCT. 14	00	51	32.3	34.20 N.	118.65 W.	2	...	...	2.2P	FELT	P	OCT. 13	04 P.M. PST
OCT. 14	16	11	31.5	37.48 N.	118.84 W.	8	...	...	3.9B	FELT	B	OCT. 14	08 A.M. PST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
CALIFORNIA--Continued													
OCT. 14	16	28	06.4	37.46 N.	118.82 W.	3	...	...	3.3B	...	B	OCT. 14	08 A.M. PST
OCT. 14	19	34	50.5	37.49 N.	118.82 W.	14	...	...	3.9B	FELT	B	OCT. 14	11 A.M. PST
OCT. 15	09	57	20.5	34.20 N.	118.65 W.	4	...	...	3.3P	V	P	OCT. 15	01 A.M. PST
OCT. 16	12	51	42.3	37.47 N.	118.84 W.	10	...	...	3.2B	...	B	OCT. 16	04 A.M. PST
OCT. 16	12	54	13.9	37.45 N.	118.84 W.	7	...	...	3.9B	IV	B	OCT. 16	04 A.M. PST
OCT. 16	12	54	39.8	37.50 N.	118.82 W.	5	...	...	3.4P	...	P	OCT. 16	04 A.M. PST
OCT. 16	13	53	21.5	37.45 N.	118.84 W.	8	...	...	3.4B	...	B	OCT. 16	05 A.M. PST
OCT. 18	08	24	22.4	36.64 N.	121.32 W.	7	...	...	3.0B	...	B	OCT. 18	00 A.M. PST
OCT. 19	00	49	42.2	35.52 N.	119.11 W.	6	...	...	3.6P	FELT	P	OCT. 18	04 P.M. PST
OCT. 19	14	27	45.5	33.27 N.	115.98 W.	4	...	...	3.2P	...	P	OCT. 19	06 A.M. PST
OCT. 19	22	04	00.8	37.03 N.	121.74 W.	11	...	...	3.7B	IV	B	OCT. 19	02 P.M. PST
OCT. 20	04	04	53.5	35.73 N.	117.73 W.	9	...	...	3.1P	...	P	OCT. 19	08 P.M. PST
OCT. 21	19	23	35.8	35.73 N.	117.73 W.	6	...	...	3.3P	...	P	OCT. 21	11 A.M. PST
OCT. 24	18	34	46.6	36.61 N.	121.28 W.	9	...	...	3.0B	...	B	OCT. 24	10 A.M. PST
OCT. 24	19	23	19.0	34.08 N.	119.22 W.	14	...	...	3.8P	V	P	OCT. 24	11 A.M. PST
OCT. 25	20	37	32.6	36.33 N.	120.51 W.	10	...	...	3.0P	...	B	OCT. 25	12 P.M. PST
OCT. 25	22	26	04.3	36.33 N.	120.50 W.	11	5.3	5.2	5.4B	VI	B	OCT. 25	02 P.M. PST
OCT. 25	22	34	32.1	36.33 N.	120.51 W.	10	...	...	3.3P	...	B	OCT. 25	02 P.M. PST
OCT. 25	23	12	18.0	36.34 N.	120.51 W.	12	4.3	...	4.2B	FELT	B	OCT. 25	03 P.M. PST
OCT. 25	23	15	54.5	36.34 N.	120.50 W.	11	...	...	4.0B	FELT	B	OCT. 25	03 P.M. PST
OCT. 25	23	35	20.6	36.33 N.	120.50 W.	12	...	...	3.2P	...	B	OCT. 25	03 P.M. PST
OCT. 26	15	48	43.8	36.32 N.	120.49 W.	11	...	...	3.2P	...	B	OCT. 26	07 A.M. PST
OCT. 26	20	42	30.4	36.34 N.	120.48 W.	12	...	...	3.1P	...	B	OCT. 26	12 P.M. PST
OCT. 27	10	21	41.7	33.89 N.	118.22 W.	15	...	...	2.9P	FELT	P	OCT. 27	02 A.M. PST
OCT. 27	21	29	39.3	36.35 N.	120.49 W.	13	...	...	3.1P	...	B	OCT. 27	01 P.M. PST
OCT. 28	09	40	36.3	33.83 N.	117.09 W.	17	...	...	2.9P	FELT	P	OCT. 28	01 A.M. PST
OCT. 29	00	52	11.2	36.34 N.	120.52 W.	11	...	...	3.0B	...	B	OCT. 28	04 P.M. PST
OCT. 29	09	20	20.6	35.72 N.	117.74 W.	6	...	...	3.4P	...	P	OCT. 29	01 A.M. PST
OCT. 30	08	19	51.8	35.73 N.	117.76 W.	8	...	...	3.0P	...	P	OCT. 30	00 A.M. PST
OCT. 30	14	43	13.3	35.73 N.	117.76 W.	7	...	...	3.2P	...	P	OCT. 30	06 A.M. PST
OCT. 30	21	53	13.5	35.64 N.	118.10 W.	6	...	...	3.0P	...	P	OCT. 30	01 P.M. PST
NOV. 4	15	10	41.3	38.44 N.	122.27 W.	14	...	...	3.2B	FELT	B	NOV. 4	07 A.M. PST
NOV. 4	16	13	40.7	33.88 N.	117.91 W.	6	...	...	2.8P	FELT	P	NOV. 4	08 A.M. PST
NOV. 4	19	07	41.2	35.74 N.	117.73 W.	9	...	...	3.0P	...	P	NOV. 4	11 A.M. PST
NOV. 9	11	12	05.8	39.74 N.	120.60 W.	10	...	...	3.0B	IV	B	NOV. 9	03 A.M. PST
NOV. 10	04	17	26.9	38.83 N.	122.77 W.	2	...	...	2.9B	FELT	B	NOV. 9	08 P.M. PST
NOV. 10	11	21	25.7	34.06 N.	116.67 W.	8	4.1	...	3.6P	V	P	NOV. 10	03 A.M. PST
NOV. 10	13	29	57.4	37.48 N.	118.82 W.	5	...	...	3.6B	FELT	B	NOV. 10	05 A.M. PST
NOV. 12	09	33	55.2	32.98 N.	115.56 W.	14	...	...	2.6P	FELT	P	NOV. 12	01 A.M. PST
NOV. 12	21	57	11.9	35.33 N.	120.54 W.	9	...	...	3.0B	FELT	B	NOV. 12	01 P.M. PST
NOV. 13	20	18	20.5	36.69 N.	121.20 W.	9	...	...	3.7B	III	B	NOV. 13	12 P.M. PST
NOV. 15	03	48	41.7	39.80 N.	122.67 W.	16	...	...	3.0B	...	B	NOV. 14	07 P.M. PST
NOV. 21	09	28	32.5	35.81 N.	117.74 W.	5	...	...	3.1P	...	P	NOV. 21	01 A.M. PST
NOV. 21	17	22	48.8	32.88 N.	115.97 W.	3	...	...	3.0P	...	P	NOV. 21	09 A.M. PST
NOV. 26	09	29	49.1	38.28 N.	122.16 W.	11	...	...	3.3B	IV	B	NOV. 26	01 A.M. PST
NOV. 26	12	30	16.5	34.84 N.	118.96 W.	11	...	...	2.8P	IV	P	NOV. 26	04 A.M. PST
NOV. 27	17	52	24.0	33.54 N.	118.20 W.	6	...	...	3.1P	...	P	NOV. 27	09 A.M. PST
NOV. 28	14	43	19.1	37.44 N.	118.85 W.	3	...	...	3.5B	FELT	B	NOV. 28	06 A.M. PST
DEC. 2	16	02	45.9	39.17 N.	122.21 W.	10	...	...	3.0B	FELT	B	DEC. 2	08 A.M. PST
DEC. 2	22	44	25.2	34.26 N.	119.56 W.	6	...	...	3.4P	...	P	DEC. 2	02 P.M. PST
DEC. 4	03	08	17.9	33.95	118.31 W.	10	...	...	2.3P	III	P	DEC. 3	07 P.M. PST
DEC. 7	23	05	39.1	36.92 N.	121.70 W.	10	...	...	3.1B	FELT	B	DEC. 7	03 P.M. PST
DEC. 9	10	15	10.5	34.02 N.	117.13 W.	20	...	...	3.1P	...	P	DEC. 9	02 A.M. PST
DEC. 11	18	54	36.8	37.65 N.	118.86 W.	6	...	...	3.1P	...	P	DEC. 11	10 A.M. PST
DEC. 12	09	39	29.4	37.54 N.	118.56 W.	6	...	...	3.0P	...	P	DEC. 12	01 A.M. PST
DEC. 12	10	38	06.0	37.54 N.	118.82 W.	6	...	...	3.6B	FELT	B	DEC. 12	02 A.M. PST
DEC. 12	20	59	08.8	37.53 N.	118.81 W.	4	...	...	3.7B	FELT	B	DEC. 12	12 P.M. PST
DEC. 14	06	46	09.9	36.91 N.	121.49 W.	5	...	...	3.2B	FELT	B	DEC. 13	10 P.M. PST
DEC. 14	15	13	41.2	37.56 N.	118.87 W.	6	...	...	3.1P	...	P	DEC. 14	07 A.M. PST
DEC. 14	19	15	31.8	40.54 N.	124.20 W.	20	...	...	3.6B	FELT	B	DEC. 14	11 A.M. PST
DEC. 16	06	53	01.3	40.50 N.	124.26 W.	18	4.8	4.5	4.4B	VI	B	DEC. 15	10 P.M. PST
DEC. 16	18	22	10.8	32.99 N.	115.55 W.	11	...	...	3.4P	...	P	DEC. 16	10 A.M. PST
DEC. 19	02	28	23.0	35.08 N.	116.82 W.	6	...	...	3.1P	...	P	DEC. 18	06 P.M. PST
DEC. 19	09	38	50.3	35.80 N.	120.44 W.	6	...	...	3.0P	...	P	DEC. 19	01 A.M. PST
DEC. 20	00	08	21.1	40.54 N.	123.97 W.	5	...	...	3.3B	FELT	B	DEC. 19	04 P.M. PST
DEC. 20	04	11	01.3	37.56 N.	118.87 W.	6	...	...	3.1P	...	P	DEC. 19	08 P.M. PST
DEC. 21	21	07	14.7	37.53 N.	118.86 W.	6	...	...	3.1P	...	P	DEC. 21	01 P.M. PST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
CALIFORNIA--Continued													
DEC. 21	22	28	12.9	37.64 N.	118.96 W.	5	...	...	3.3B	FELT	B	DEC. 21	02 P.M. PST
DEC. 22	09	40	49.9	37.36 N.	118.52 W.	10	...	...	3.4B	FELT	B	DEC. 22	01 A.M. PST
DEC. 22	12	46	59.9	33.46 N.	116.57 W.	12	...	...	3.0P	...	P	DEC. 22	04 A.M. PST
DEC. 22	14	47	36.9	35.75 N.	117.75 W.	10	...	...	3.3P	FELT	P	DEC. 22	06 A.M. PST
DEC. 23	10	47	03.1	37.48 N.	118.86 W.	8	...	...	2.9P	...	P	DEC. 23	02 A.M. PST
DEC. 23	13	52	00.6	35.89 N.	120.39 W.	8	...	...	2.9P	...	P	DEC. 23	05 A.M. PST
DEC. 26	01	54	55.3	35.81 N.	117.74 W.	7	...	...	3.3P	...	P	DEC. 25	05 P.M. PST
DEC. 26	09	59	46.6	38.81 N.	122.78 W.	1	...	...	3.1B	IV	B	DEC. 26	01 A.M. PST
DEC. 26	10	04	24.9	36.81 N.	121.55 W.	6	...	...	3.5B	FELT	B	DEC. 26	02 A.M. PST
DEC. 28	00	49	38.8	37.49 N.	118.80 W.	3	...	...	3.6B	FELT	B	DEC. 27	04 P.M. PST
DEC. 28	07	15	14.8	37.49 N.	118.81 W.	7	...	...	3.3B	...	B	DEC. 27	11 P.M. PST
DEC. 28	07	20	23.6	35.81 N.	117.75 W.	7	...	...	3.4P	...	P	DEC. 27	11 P.M. PST
DEC. 28	16	08	59.6	35.81 N.	117.75 W.	7	...	...	3.0P	...	P	DEC. 28	08 A.M. PST
DEC. 28	20	39	15.3	35.81 N.	117.75 W.	7	...	...	3.0P	...	P	DEC. 28	12 P.M. PST
DEC. 30	04	00	29.5	33.96 N.	118.82 W.	0	4.0	...	3.6P	III	P	DEC. 29	08 P.M. PST
DEC. 31	06	21	49.6	35.81 N.	117.74 W.	7	...	...	3.0P	...	P	DEC. 30	10 P.M. PST
DEC. 31	09	07	23.3	35.81 N.	117.74 W.	6	4.4	...	4.0P	IV	P	DEC. 31	01 A.M. PST
DEC. 31	19	50	08.9	35.81 N.	117.74 W.	6	...	...	3.5P	...	P	DEC. 31	11 A.M. PST
DEC. 31	19	52	56.7	35.81 N.	117.75 W.	5	...	...	3.0P	...	P	DEC. 31	11 A.M. PST
DEC. 31	19	56	07.6	35.81 N.	117.75 W.	6	...	...	3.6P	...	P	DEC. 31	11 A.M. PST
DEC. 31	20	46	52.8	35.81 N.	117.75 W.	7	...	...	3.0P	...	P	DEC. 31	12 P.M. PST
CALIFORNIA--OFF THE COAST													
JAN. 8	20	41	16.5	40.28 N.	124.44 W.	25	...	...	3.8B	III	B	JAN. 8	12 P.M. PST
JAN. 8	22	23	06.4	40.28 N.	124.45 W.	20	...	...	3.4B	...	B	JAN. 8	02 P.M. PST
JAN. 13	12	26	21.0	40.37 N.	125.76 W.	8	4.9	5.1	4.8B	V	G	JAN. 13	04 A.M. PST
JAN. 28	01	44	13.4	32.55 N.	119.22 W.	16	...	...	3.8P	...	P	JAN. 27	05 P.M. PST
FEB. 6	12	02	03.6	41.00 N.	125.01 W.	4	5.1	5.1	5.2B	IV	B	FEB. 6	04 A.M. PST
FEB. 11	09	30	45.8	40.97 N.	124.96 W.	5	...	...	3.7B	...	B	FEB. 11	01 A.M. PST
FEB. 24	05	22	42.6	40.86 N.	124.90 W.	15	4.4	...	4.4B	IV	B	FEB. 23	09 P.M. PST
MAR. 1	21	42	46.8	40.56 N.	124.78 W.	5	...	...	3.6B	...	B	MAR. 1	01 P.M. PST
MAR. 2	23	34	11.4	40.38 N.	124.75 W.	20	...	...	3.3B	...	B	MAR. 2	03 P.M. PST
MAR. 4	13	19	40.7	41.27 N.	125.85 W.	5	...	...	3.6B	...	B	MAR. 4	05 A.M. PST
MAR. 4	20	17	53.5	40.81 N.	127.07 W.	5	4.2	...	4.0B	...	B	MAR. 4	12 P.M. PST
MAR. 13	03	01	42.7	41.67 N.	126.92 W.	10	3.8	...	...	...	G	MAR. 12	07 P.M. PST
MAR. 30	09	26	27.7	40.59 N.	125.35 W.	5	...	...	3.6B	...	B	MAR. 30	01 A.M. PST
APR. 5	01	14	54.5	33.52 N.	118.94 W.	19	...	...	3.7P	III	P	APR. 4	05 P.M. PST
APR. 5	11	13	36.9	33.53 N.	118.91 W.	6	...	...	3.4P	...	P	APR. 5	03 A.M. PST
APR. 5	13	10	13.6	33.55 N.	118.92 W.	8	...	...	3.0P	...	P	APR. 5	05 A.M. PST
APR. 14	11	11	59.6	40.50 N.	125.23 W.	5	3.4	...	3.9B	...	B	APR. 14	03 A.M. PST
APR. 17	23	36	41.0	41.07 N.	124.53 W.	15	...	...	3.8B	...	B	APR. 17	03 P.M. PST
APR. 29	15	33	45.0	33.51 N.	118.95 W.	19	...	...	3.9P	III	P	APR. 29	07 A.M. PST
MAY 25	13	44	30.3	33.54 N.	118.21 W.	14	4.7	...	4.1P	IV	P	MAY 25	05 A.M. PST
MAY 25	14	36	43.7	33.55 N.	118.20 W.	6	...	...	3.0P	...	P	MAY 25	06 A.M. PST
MAY 26	04	05	15.1	33.55 N.	118.20 W.	6	...	...	3.2P	...	P	MAY 25	08 P.M. PST
JUNE 15	11	59	32.1	32.57 N.	118.89 W.	24	...	...	3.3P	...	P	JUNE 15	03 A.M. PST
JUNE 15	22	44	41.9	40.68 N.	124.90 W.	13	...	...	3.0B	...	B	JUNE 15	02 P.M. PST
JUNE 22	01	42	21.0	40.39 N.	125.14 W.	25	...	...	3.5B	...	B	JUNE 21	05 P.M. PST
JULY 1	02	18	20.0	40.76 N.	124.44 W.	20	...	...	3.1B	...	B	JUNE 30	06 P.M. PST
JULY 25	08	56	17.9	40.45 N.	125.50 W.	20	...	...	3.5B	...	B	JULY 25	00 A.M. PST
JULY 28	17	06	31.6	40.43 N.	124.50 W.	16	...	...	3.3B	...	B	JULY 28	09 A.M. PST
JULY 30	07	42	39.7	40.38 N.	124.81 W.	12	...	...	3.6B	...	B	JULY 29	10 P.M. PST
AUG. 17	14	10	02.2	40.58 N.	124.85 W.	22	...	...	3.0B	...	B	AUG. 17	06 A.M. PST
AUG. 19	09	24	46.2	40.29 N.	124.82 W.	18	...	...	3.1B	...	B	AUG. 19	01 A.M. PST
AUG. 29	21	23	56.8	40.71 N.	125.24 W.	10	...	...	3.6B	...	B	AUG. 29	01 P.M. PST
SEPT. 1	10	47	43.0	32.80 N.	117.45 W.	6	...	...	3.0P	...	P	SEPT. 1	02 A.M. PST
SEPT. 10	17	47	05.6	33.64 N.	119.02 W.	6	...	...	3.1P	...	P	SEPT. 10	09 A.M. PST
SEPT. 20	09	36	29.5	32.86 N.	119.99 W.	16	3.8	...	3.8P	...	P	SEPT. 20	01 A.M. PST
OCT. 1	11	22	57.9	41.56 N.	126.26 W.	5	4.1	3.7	3.7B	...	B	OCT. 1	03 A.M. PST
OCT. 11	14	07	40.9	40.39 N.	125.07 W.	15	...	...	3.3B	...	B	OCT. 11	06 A.M. PST
OCT. 12	12	18	29.8	40.56 N.	124.55 W.	25	...	...	3.3B	...	B	OCT. 12	04 A.M. PST
OCT. 17	20	22	10.5	41.84 N.	126.56 W.	10	3.3	...	...	...	G	OCT. 17	12 P.M. PST
NOV. 27	10	05	49.2	40.40 N.	127.13 W.	20	...	...	3.9B	...	B	NOV. 27	02 A.M. PST
DEC. 1	10	37	41.9	41.93 N.	126.76 W.	10	...	...	...	...	G	DEC. 1	02 A.M. PST
DEC. 4	03	08	23.2	40.30 N.	124.52 W.	24	...	...	3.1B	FELT	B	DEC. 3	07 P.M. PST
DEC. 10	21	27	56.8	40.47 N.	125.34 W.	11	...	...	4.4B	...	B	DEC. 10	01 P.M. PST
DEC. 24	06	02	32.3	41.86 N.	127.08 W.	10	4.4	3.9	...	...	G	DEC. 23	10 P.M. PST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
COLORADO													
MAR. 11	23	55	28.8	39.86 N.	104.85 W.	5	...	...	2.8G	III	G	MAR. 11	04 P.M. MST
SEPT. 18	16	11	44.9	39.90 N.	104.91 W.	5	...	...	2.8G	III	G	SEPT. 18	09 A.M. MST
NOV. 22	10	09	01.4	39.74 N.	107.58 W.	5	...	...	2.9G	FELT	G	NOV. 22	03 A.M. MST
CONNECTICUT													
JUNE 17	08	02	38.4	41.51 N.	72.47 W.	8	...	...	2.2J	FELT	J	JUNE 17	03 A.M. EST
JUNE 17	14	14	20.1	41.53 N.	72.46 W.	5	...	...	2.7J	FELT	J	JUNE 17	09 A.M. EST
JUNE 17	14	14	36.0	41.55 N.	72.45 W.	4	...	...	2.9J	IV	J	JUNE 17	09 A.M. EST
JUNE 17	15	29	23.9	41.46 N.	72.46 W.	14	...	...	2.1J	FELT	J	JUNE 17	10 A.M. EST
GEORGIA													
FEB. 23	09	19	07.9	34.61 N.	85.46 W.	0	...	...	2.5F	...	F	FEB. 23	04 A.M. EST
MAY 5	11	11	02.6	32.71 N.	83.47 W.		...	...	2.7F	...	F	MAY 5	06 A.M. EST
MAY 12	01	21	52.2	34.90 N.	85.02 W.	10	...	...	2.6K	...	K	MAY 11	08 P.M. EST
OCT. 31	03	07	36.7	32.67 N.	84.87 W.	0	...	...	3.0F	V	F	OCT. 30	10 P.M. EST
OCT. 31	03	12	12.2	32.64 N.	84.89 W.	0	...	...	3.1F	FELT	F	OCT. 30	10 P.M. EST
DEC. 7	00	19	25.6	32.71 N.	83.47 W.		...	...	2.7F	...	F	DEC. 6	07 P.M. EST
DEC. 8	23	36	56	32.72 N.	83.46 W.	3	...	...	2.9F	...	F	DEC. 8	06 P.M. EST
DEC. 11	00	12	22.4	32.71 N.	83.47 W.		...	...	2.5F	...	F	DEC. 10	07 P.M. EST
DEC. 11	00	25	08.3	32.85 N.	83.53 W.	0	...	...	3.0F	...	F	DEC. 10	07 P.M. EST
DEC. 11	03	47	28.1	32.71 N.	83.47 W.		...	...	2.6F	...	F	DEC. 10	10 P.M. EST
DEC. 13	01	21	18.9	32.71 N.	83.47 W.		...	...	2.7F	...	F	DEC. 12	08 P.M. EST
DEC. 13	22	57	18.6	32.71 N.	83.47 W.		...	...	2.5F	...	F	DEC. 13	05 P.M. EST
DEC. 13	22	58	16.4	32.71 N.	83.47 W.		...	...	2.6F	...	F	DEC. 13	05 P.M. EST
DEC. 20	20	29	49.8	32.71 N.	83.47 W.		...	...	2.6F	...	F	DEC. 20	03 P.M. EST
DEC. 21	05	30	46.2	32.80 N.	83.52 W.	0	...	...	2.7F	III	F	DEC. 21	00 A.M. EST
DEC. 21	08	01	59.5	32.71 N.	83.47 W.		...	...	2.7F	...	F	DEC. 21	03 A.M. EST
DEC. 23	11	52	11.3	32.71 N.	83.47 W.		...	...	2.6F	...	F	DEC. 23	06 A.M. EST
HAWAII													
JAN. 1	03	35	25.1	19.38 N.	155.28 W.	28	...	...	3.0H	...	H	DEC. 31	05 P.M. HST
JAN. 9	14	32	07.3	19.17 N.	155.54 W.	34	...	...	3.1H	II	H	JAN. 9	04 A.M. HST
JAN. 9	23	24	59.5	20.25 N.	155.65 W.	43	...	...	3.6H	...	H	JAN. 9	01 P.M. HST
JAN. 15	10	07	52.6	20.08 N.	155.84 W.	28	...	...	3.6H	IV	H	JAN. 15	00 A.M. HST
JAN. 15	11	04	42.1	19.31 N.	155.23 W.	10	...	...	3.7H	III	H	JAN. 15	01 A.M. HST
JAN. 16	19	57	09.9	19.36 N.	155.25 W.	10	...	...	3.1H	...	H	JAN. 16	09 A.M. HST
JAN. 21	21	52	41.2	19.23 N.	155.59 W.	10	5.4	4.9	5.4H	VI	H	JAN. 21	11 A.M. HST
JAN. 21	22	29	13.9	19.22 N.	155.55 W.	14	5.6	4.8	5.4H	VI	H	JAN. 21	12 P.M. HST
JAN. 21	22	42	05.9	19.17 N.	155.53 W.	8	...	...	3.0H	III	H	JAN. 21	12 P.M. HST
JAN. 21	22	45	12.7	19.19 N.	155.56 W.	7	...	...	3.0H	II	H	JAN. 21	12 P.M. HST
JAN. 21	22	48	09.6	19.23 N.	155.54 W.	12	...	...	3.4H	III	H	JAN. 21	12 P.M. HST
JAN. 21	22	51	56.4	19.16 N.	155.53 W.	12	...	...	3.0H	II	H	JAN. 21	12 P.M. HST
JAN. 21	23	01	09.7	19.20 N.	155.54 W.	10	...	...	4.1H	IV	H	JAN. 21	01 P.M. HST
JAN. 21	23	35	10.9	19.18 N.	155.52 W.	6	...	...	3.1H	III	H	JAN. 21	01 P.M. HST
JAN. 21	23	37	17.4	19.23 N.	155.55 W.	12	...	...	4.2H	V	H	JAN. 21	01 P.M. HST
JAN. 22	01	19	41.0	19.22 N.	155.53 W.	8	...	...	3.1H	III	H	JAN. 21	03 P.M. HST
JAN. 22	01	35	12.5	19.20 N.	155.52 W.	9	...	...	3.2H	III	H	JAN. 21	03 P.M. HST
JAN. 22	02	23	36.0	19.17 N.	155.53 W.	12	...	...	3.1H	III	H	JAN. 21	04 P.M. HST
JAN. 22	12	25	05.2	19.20 N.	155.60 W.	10	...	...	3.6H	III	H	JAN. 22	02 A.M. HST
JAN. 23	03	45	08.1	19.23 N.	155.57 W.	10	...	...	4.3H	IV	H	JAN. 22	05 P.M. HST
JAN. 24	00	06	45.7	19.16 N.	155.57 W.	9	...	...	3.0H	...	H	JAN. 23	02 P.M. HST
JAN. 24	08	40	44.1	19.39 N.	155.28 W.	3	...	...	3.1H	...	H	JAN. 23	10 P.M. HST
JAN. 26	03	03	51.1	19.20 N.	155.59 W.	9	...	...	3.4H	III	H	JAN. 25	05 P.M. HST
JAN. 26	23	45	17.1	19.21 N.	155.59 W.	9	...	...	3.6H	...	H	JAN. 26	01 P.M. HST
JAN. 27	14	00	14.8	19.43 N.	155.62 W.	3	...	...	3.3H	...	H	JAN. 27	04 A.M. HST
JAN. 29	13	43	02.3	19.28 N.	155.55 W.	5	...	...	3.0H	...	H	JAN. 29	03 A.M. HST
JAN. 30	03	13	25.9	19.92 N.	155.60 W.	13	...	...	3.6H	IV	H	JAN. 29	05 P.M. HST
JAN. 30	03	16	49.4	19.92 N.	155.60 W.	11	...	...	3.0H	II	H	JAN. 29	05 P.M. HST
JAN. 31	05	40	39.3	19.36 N.	155.26 W.	27	...	...	3.0H	...	H	JAN. 30	07 P.M. HST
FEB. 2	14	58	14.3	19.18 N.	155.59 W.	8	...	...	3.0H	III	H	FEB. 2	04 A.M. HST
FEB. 2	16	29	49.9	19.22 N.	155.58 W.	11	...	...	4.3H	IV	H	FEB. 2	06 A.M. HST
FEB. 6	13	23	01.3	19.46 N.	155.24 W.	32	...	...	3.1H	...	H	FEB. 6	03 A.M. HST
FEB. 8	15	29	42.8	19.24 N.	155.55 W.	9	...	...	3.2H	...	H	FEB. 8	05 A.M. HST
FEB. 9	10	43	18.7	19.18 N.	155.60 W.	9	...	...	3.0H	...	H	FEB. 9	00 A.M. HST
FEB. 9	15	42	22.9	19.33 N.	155.12 W.	9	...	...	3.8H	III	H	FEB. 9	05 A.M. HST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
HAWAII--Continued													
FEB. 13	02	06	30.9	19.36 N.	155.05 W.	9	...	...	3.4H	II	H	FEB. 12	04 P.M. HST
FEB. 15	02	24	28.4	19.36 N.	155.05 W.	8	...	...	3.3H	...	H	FEB. 14	04 P.M. HST
FEB. 16	03	36	28.2	19.36 N.	155.33 W.	32	...	...	4.2H	IV	H	FEB. 15	05 P.M. HST
FEB. 18	18	04	09.1	19.17 N.	155.58 W.	10	...	...	3.6H	...	H	FEB. 18	08 A.M. HST
FEB. 21	12	56	48.2	19.20 N.	155.59 W.	3	...	...	3.1H	...	H	FEB. 21	02 A.M. HST
FEB. 22	16	27	48.6	19.43 N.	155.63 W.	3	...	...	3.2H	...	H	FEB. 22	06 A.M. HST
MAR. 7	22	31	36.1	19.37 N.	155.05 W.	9	...	...	3.2H	II	H	MAR. 7	12 P.M. HST
MAR. 11	11	30	01.6	19.31 N.	155.23 W.	9	...	...	3.0H	...	H	MAR. 11	01 A.M. HST
MAR. 16	07	41	35.6	19.32 N.	155.22 W.	11	...	...	3.5H	III	H	MAR. 15	09 P.M. HST
MAR. 20	23	10	22.3	19.34 N.	155.28 W.	36	...	...	3.9H	III	H	MAR. 20	01 P.M. HST
MAR. 26	11	04	34.0	19.92 N.	155.60 W.	11	...	...	3.6H	IV	H	MAR. 26	01 A.M. HST
APR. 5	14	19	06.3	19.33 N.	155.12 W.	9	...	...	3.0H	...	H	APR. 5	04 A.M. HST
APR. 6	20	58	59.9	19.35 N.	155.10 W.	9	...	...	3.0H	III	H	APR. 6	10 A.M. HST
APR. 7	10	19	48.2	19.52 N.	155.92 W.	12	...	...	3.1H	...	H	APR. 7	00 A.M. HST
APR. 7	20	54	55.1	19.37 N.	155.25 W.	10	...	...	3.0H	...	H	APR. 7	10 A.M. HST
APR. 10	15	59	49.6	19.39 N.	155.28 W.	3	...	...	3.1H	III	H	APR. 10	05 A.M. HST
APR. 12	02	04	02.4	19.33 N.	155.12 W.	9	4.6	...	4.2H	V	H	APR. 11	04 P.M. HST
APR. 16	15	00	23.2	20.03 N.	155.34 W.	7	...	...	3.6H	III	H	APR. 16	05 A.M. HST
APR. 17	01	04	47.5	19.33 N.	155.20 W.	10	...	...	3.0H	...	H	APR. 16	03 P.M. HST
APR. 17	01	15	40.7	19.33 N.	155.20 W.	10	...	...	3.7H	III	H	APR. 16	03 P.M. HST
APR. 17	11	20	50.7	19.42 N.	155.28 W.	1	...	...	3.9H	V	H	APR. 17	01 A.M. HST
APR. 19	12	23	55.9	19.35 N.	155.08 W.	9	...	...	3.8H	IV	H	APR. 19	02 A.M. HST
APR. 19	13	02	00.7	19.34 N.	155.07 W.	9	...	...	3.9H	IV	H	APR. 19	03 A.M. HST
APR. 27	02	51	14.5	20.18 N.	156.16 W.	31	...	...	3.1H	...	H	APR. 26	04 P.M. HST
APR. 28	06	23	01.4	19.34 N.	155.06 W.	9	...	...	3.4H	III	H	APR. 27	08 P.M. HST
APR. 30	18	48	52.7	19.36 N.	155.08 W.	9	...	...	3.4H	II	H	APR. 30	08 A.M. HST
APR. 30	21	41	17.9	19.41 N.	155.27 W.	1	...	...	3.2H	...	H	APR. 30	11 A.M. HST
MAY 4	17	29	42.6	19.32 N.	155.22 W.	10	...	...	3.6H	III	H	MAY 4	07 A.M. HST
MAY 10	20	47	27.2	19.18 N.	155.60 W.	10	...	...	3.9H	IV	H	MAY 10	10 A.M. HST
MAY 10	22	08	48.0	19.34 N.	155.12 W.	9	...	...	3.0H	...	H	MAY 10	12 P.M. HST
MAY 13	21	40	34.2	20.07 N.	156.61 W.	0	...	...	3.2H	...	H	MAY 13	11 A.M. HST
MAY 14	16	26	31.7	20.00 N.	155.87 W.	20	4.5	...	4.8H	V	H	MAY 14	06 A.M. HST
MAY 14	16	31	29.1	20.00 N.	155.87 W.	21	...	...	3.1H	...	H	MAY 14	06 A.M. HST
MAY 15	15	09	46.2	19.29 N.	155.23 W.	11	...	...	3.1H	III	H	MAY 15	05 A.M. HST
MAY 19	00	10	32.0	19.91 N.	156.36 W.	0	...	...	3.4H	...	H	MAY 18	02 P.M. HST
MAY 19	03	36	19.8	19.95 N.	156.43 W.	1	4.8	3.7	4.8H	V	H	MAY 18	05 P.M. HST
MAY 19	10	05	51.5	19.39 N.	155.28 W.	3	...	...	3.0H	...	H	MAY 19	00 A.M. HST
MAY 21	23	42	40.6	19.38 N.	155.01 W.	9	...	...	3.0H	...	H	MAY 21	01 P.M. HST
MAY 28	01	28	09.6	19.35 N.	155.22 W.	9	...	...	3.0H	...	H	MAY 27	03 P.M. HST
JUNE 2	20	34	57.1	19.45 N.	155.48 W.	11	...	...	3.2H	...	H	JUNE 2	10 A.M. HST
JUNE 3	12	58	11.2	20.03 N.	155.83 W.	28	...	...	3.3H	...	H	JUNE 3	02 A.M. HST
JUNE 6	18	39	30.9	20.15 N.	155.78 W.	27	...	...	3.0H	II	H	JUNE 6	08 A.M. HST
JUNE 10	12	16	55.7	19.34 N.	155.22 W.	10	...	...	3.1H	II	H	JUNE 10	02 A.M. HST
JUNE 11	07	49	15.9	19.41 N.	156.14 W.	41	...	...	3.2H	...	H	JUNE 10	09 P.M. HST
JUNE 14	18	15	38.8	19.32 N.	155.22 W.	10	...	...	3.5H	...	H	JUNE 14	08 A.M. HST
JUNE 20	17	30	13.5	19.33 N.	155.12 W.	9	...	...	3.0H	...	H	JUNE 20	07 A.M. HST
JUNE 21	16	04	14.8	19.36 N.	155.25 W.	10	...	...	3.4H	III	H	JUNE 21	06 A.M. HST
JUNE 22	23	58	06.3	19.33 N.	155.32 W.	10	...	...	3.1H	...	H	JUNE 22	01 P.M. HST
JULY 1	23	27	31.4	19.19 N.	155.61 W.	10	...	...	3.6H	...	H	JULY 1	01 P.M. HST
JULY 6	07	19	02.4	19.29 N.	155.38 W.	6	...	...	3.2H	III	H	JULY 5	09 P.M. HST
JULY 12	12	59	48.1	19.28 N.	155.37 W.	8	...	...	3.1H	...	H	JULY 12	02 A.M. HST
JULY 18	13	30	11.1	19.12 N.	155.52 W.	13	...	...	3.0H	III	H	JULY 18	03 A.M. HST
JULY 18	22	17	35.1	18.93 N.	155.24 W.	14	...	...	3.0H	...	H	JULY 18	12 P.M. HST
JULY 30	11	37	10.7	19.44 N.	157.18 W.	20	...	...	3.4H	...	H	JULY 30	01 A.M. HST
AUG. 1	11	51	41.0	19.43 N.	155.63 W.	3	...	...	3.2H	...	H	AUG. 1	01 A.M. HST
AUG. 3	20	09	35.4	19.47 N.	155.76 W.	10	...	...	3.2H	...	H	AUG. 3	10 A.M. HST
AUG. 7	21	03	03.9	19.35 N.	155.10 W.	8	...	...	3.2H	...	H	AUG. 7	11 A.M. HST
AUG. 8	00	02	26.8	19.33 N.	155.19 W.	10	...	...	3.4H	III	H	AUG. 7	02 P.M. HST
AUG. 9	01	03	07.2	19.36 N.	155.10 W.	9	...	...	3.3H	...	H	AUG. 8	03 P.M. HST
AUG. 10	02	55	09.5	19.38 N.	155.07 W.	8	...	...	3.1H	...	H	AUG. 9	04 P.M. HST
AUG. 10	11	21	54.1	19.30 N.	155.22 W.	10	...	...	3.6H	III	H	AUG. 10	01 A.M. HST
AUG. 10	11	37	51.4	19.31 N.	155.22 W.	8	...	...	3.4H	III	H	AUG. 10	01 A.M. HST
AUG. 12	10	43	35.8	19.42 N.	155.27 W.	16	...	...	4.0H	IV	H	AUG. 12	00 A.M. HST
AUG. 12	12	44	04.5	19.42 N.	155.27 W.	16	...	...	3.3H	III	H	AUG. 12	02 A.M. HST
AUG. 15	17	01	44.0	19.33 N.	155.13 W.	9	...	...	3.4H	...	H	AUG. 15	07 A.M. HST
AUG. 17	18	57	39.6	18.90 N.	155.27 W.	14	...	...	3.9H	...	H	AUG. 17	08 A.M. HST
AUG. 20	08	51	20.5	19.75 N.	156.03 W.	8	...	...	3.6H	IV	H	AUG. 19	10 P.M. HST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
HAWAII--Continued													
AUG. 20	08	59	59.1	19.75 N.	156.01 W.	8	...	...	3.0H	III	H	AUG. 19	10 P.M. HST
AUG. 27	11	48	30.7	20.20 N.	155.64 W.	10	...	...	3.8H	IV	H	AUG. 27	01 A.M. HST
AUG. 29	01	55	23.3	19.39 N.	155.40 W.	11	...	...	3.0H	...	H	AUG. 28	03 P.M. HST
AUG. 31	21	32	25.3	19.31 N.	155.22 W.	11	...	...	3.5H	...	H	AUG. 31	11 A.M. HST
SEPT. 2	16	09	54.2	21.39 N.	155.26 W.	2	...	...	3.1H	...	H	SEPT. 2	06 A.M. HST
SEPT. 11	05	03	44.7	19.39 N.	155.42 W.	11	...	...	3.4H	III	H	SEPT. 10	07 P.M. HST
SEPT. 12	16	18	34.6	19.36 N.	155.00 W.	9	...	...	3.1H	III	H	SEPT. 12	06 A.M. HST
SEPT. 14	16	49	41.9	19.33 N.	155.19 W.	10	...	...	3.0H	...	H	SEPT. 14	06 A.M. HST
SEPT. 14	19	17	32.6	19.18 N.	155.60 W.	10	...	...	3.6H	IV	H	SEPT. 14	09 A.M. HST
SEPT. 22	01	35	27.8	19.33 N.	155.12 W.	9	...	...	3.7H	IV	H	SEPT. 21	03 P.M. HST
SEPT. 24	00	23	37.5	19.38 N.	155.40 W.	11	...	...	3.2H	III	H	SEPT. 23	02 P.M. HST
SEPT. 26	03	02	15.1	19.39 N.	155.28 W.	6	...	...	3.3H	III	H	SEPT. 25	05 P.M. HST
SEPT. 26	04	38	47.3	19.40 N.	155.26 W.	1	...	...	3.3H	III	H	SEPT. 25	06 P.M. HST
SEPT. 29	16	20	52.1	19.37 N.	155.18 W.	32	...	...	3.4H	III	H	SEPT. 29	06 A.M. HST
SEPT. 30	16	43	08.5	19.42 N.	155.60 W.	0	...	...	3.0H	...	H	SEPT. 30	06 A.M. HST
OCT. 2	07	04	57.6	19.42 N.	155.63 W.	2	...	...	3.0H	...	H	OCT. 1	09 P.M. HST
OCT. 5	21	39	36.8	18.91 N.	155.27 W.	17	...	...	3.9H	...	H	OCT. 5	11 A.M. HST
OCT. 7	03	35	28.6	19.43 N.	155.63 W.	3	...	...	3.4H	...	H	OCT. 6	05 P.M. HST
OCT. 11	18	59	53.5	19.38 N.	155.25 W.	3	...	...	3.1H	III	H	OCT. 11	08 A.M. HST
OCT. 13	21	12	03.7	19.45 N.	155.49 W.	11	...	...	3.0H	...	H	OCT. 13	11 A.M. HST
OCT. 14	06	54	44.6	19.51 N.	154.88 W.	38	...	...	3.3H	...	H	OCT. 13	08 P.M. HST
OCT. 15	04	30	26.5	19.43 N.	155.43 W.	10	...	...	3.5H	...	H	OCT. 14	06 P.M. HST
OCT. 17	15	09	34.1	19.22 N.	155.63 W.	8	...	...	3.1H	...	H	OCT. 17	05 A.M. HST
OCT. 20	02	14	52.4	20.40 N.	155.96 W.	33	...	...	3.1H	...	H	OCT. 19	04 P.M. HST
OCT. 22	13	13	29.0	19.33 N.	155.19 W.	10	...	...	3.3H	II	H	OCT. 22	03 A.M. HST
OCT. 23	07	42	56.4	19.35 N.	155.22 W.	9	...	...	3.0H	II	H	OCT. 22	09 P.M. HST
OCT. 25	16	19	30.6	19.33 N.	155.19 W.	10	...	...	3.2H	III	H	OCT. 25	06 A.M. HST
NOV. 1	02	24	45.7	19.33 N.	155.12 W.	8	...	...	3.0H	II	H	OCT. 31	04 P.M. HST
NOV. 10	09	04	32.7	19.33 N.	155.20 W.	10	...	...	3.2H	...	H	NOV. 9	11 P.M. HST
NOV. 13	02	18	58.2	19.45 N.	155.44 W.	15	4.4	...	4.1H	V	H	NOV. 12	04 P.M. HST
NOV. 13	02	28	29.0	19.46 N.	155.43 W.	15	...	...	3.3H	III	H	NOV. 12	04 P.M. HST
NOV. 13	11	01	27.4	20.77 N.	155.51 W.	15	...	...	3.0H	...	H	NOV. 13	01 A.M. HST
NOV. 13	23	12	12.9	19.32 N.	155.18 W.	9	...	...	3.0H	...	H	NOV. 13	01 P.M. HST
NOV. 17	09	28	43.4	19.35 N.	155.33 W.	32	...	...	3.3H	...	H	NOV. 16	11 P.M. HST
NOV. 18	07	24	44.1	19.34 N.	155.12 W.	8	...	...	3.0H	...	H	NOV. 17	09 P.M. HST
NOV. 25	14	01	01.0	19.19 N.	155.60 W.	8	...	...	3.0H	...	H	NOV. 25	04 A.M. HST
NOV. 25	19	03	36.3	19.37 N.	155.25 W.	10	...	...	3.0H	...	H	NOV. 25	09 A.M. HST
NOV. 25	19	10	37.3	19.36 N.	155.30 W.	35	...	...	3.6H	III	H	NOV. 25	09 A.M. HST
NOV. 27	20	11	57.4	19.97 N.	155.47 W.	40	...	...	3.2H	...	H	NOV. 27	10 A.M. HST
NOV. 28	02	01	25.5	19.28 N.	155.51 W.	9	...	...	3.8H	IV	H	NOV. 27	04 P.M. HST
NOV. 30	00	50	38.0	19.35 N.	155.40 W.	32	...	...	4.0H	IV	H	NOV. 29	02 P.M. HST
NOV. 30	04	01	04.7	19.31 N.	155.23 W.	9	...	...	3.1H	...	H	NOV. 29	06 P.M. HST
NOV. 30	23	15	00.4	19.36 N.	155.25 W.	10	...	...	3.0H	...	H	NOV. 30	01 P.M. HST
DEC. 5	15	37	37.7	19.81 N.	156.16 W.	39	...	...	3.8H	III	H	DEC. 5	05 A.M. HST
DEC. 8	22	21	37.6	19.36 N.	155.08 W.	9	...	...	3.3H	...	H	DEC. 8	12 P.M. HST
DEC. 10	05	38	11.7	19.40 N.	155.29 W.	3	...	...	3.1H	IV	H	DEC. 9	07 P.M. HST
DEC. 10	06	00	51.6	19.39 N.	155.24 W.	4	...	...	3.1H	IV	H	DEC. 9	08 P.M. HST
DEC. 10	21	21	12.1	19.23 N.	155.23 W.	32	...	...	3.0H	...	H	DEC. 10	11 A.M. HST
DEC. 11	04	20	14.7	19.38 N.	155.24 W.	4	...	...	3.0H	...	H	DEC. 10	06 P.M. HST
DEC. 19	12	56	52.4	19.89 N.	155.48 W.	27	...	...	3.1H	...	H	DEC. 19	02 A.M. HST
DEC. 21	22	12	59.0	19.34 N.	155.19 W.	9	...	...	3.2H	...	H	DEC. 21	12 P.M. HST
DEC. 22	03	56	16.6	19.38 N.	155.24 W.	4	...	...	3.1H	...	H	DEC. 21	05 P.M. HST
DEC. 28	09	35	01.9	19.34 N.	155.10 W.	9	...	...	3.2H	II	H	DEC. 27	11 P.M. HST
DEC. 31	13	55	10.0	19.38 N.	155.24 W.	1	...	...	3.4H	II	H	DEC. 31	03 A.M. HST
IDAHO													
JAN. 28	08	00	40.5	42.42 N.	111.52 W.	5	...	...	3.2G	III	G	JAN. 28	01 A.M. MST
FEB. 3	10	06	17.0	44.06 N.	114.34 W.	2	...	...	2.7D	...	D	FEB. 3	03 A.M. MST
FEB. 14	17	05	37.1	44.82 N.	114.34 W.	13	...	...	2.7D	...	D	FEB. 14	10 A.M. MST
APR. 25	00	15	14.7	43.99 N.	114.55 W.	33	...	...	3.1D	...	D	APR. 24	05 P.M. MST
MAY 8	13	56	53.7	44.05 N.	114.41 W.	5	...	...	2.8D	...	D	MAY 8	06 A.M. MST
MAY 30	04	21	18.7	44.61 N.	114.35 W.	8	...	...	2.5D	...	D	MAY 29	09 P.M. MST
MAY 30	11	06	43.4	42.69 N.	111.24 W.	7	...	...	4.0U	...	U	MAY 30	04 A.M. MST
MAY 30	11	55	32.4	42.65 N.	111.23 W.	7	...	...	3.6U	...	U	MAY 30	04 A.M. MST
JUNE 8	22	47	46.4	44.59 N.	115.15 W.	5	...	...	3.7G	III	G	JUNE 8	02 P.M. PST
AUG. 5	23	20	23.1	44.63 N.	114.43 W.	18	...	...	2.6D	...	D	AUG. 5	04 P.M. MST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
IDAHO--Continued													
AUG. 10	19	35	46.2	44.62 N.	114.40 W.	5	...	...	4.1G	III	G	AUG. 10	11 A.M. PST
AUG. 10	19	56	59.0	44.61 N.	114.25 W.	8	...	...	2.7D	...	D	AUG. 10	12 P.M. MST
AUG. 10	23	58	06.1	44.62 N.	114.38 W.	18	...	...	2.5D	...	D	AUG. 10	04 P.M. MST
AUG. 11	04	33	33.9	44.59 N.	114.44 W.	31	...	...	2.5D	...	D	AUG. 10	09 P.M. MST
AUG. 11	06	18	08.6	44.63 N.	114.37 W.	20	...	...	2.6D	...	D	AUG. 10	11 P.M. MST
AUG. 25	09	39	28.1	44.61 N.	114.31 W.	11	...	...	2.5D	...	D	AUG. 25	02 A.M. MST
SEPT. 4	14	48	43.2	44.59 N.	115.06 W.	5	...	...	3.2G	...	G	SEPT. 4	06 A.M. PST
SEPT. 29	03	45	48.5	47.35 N.	112.77 W.	8	...	...	2.7D	...	D	SEPT. 28	08 P.M. MST
SEPT. 30	02	27	19.8	42.64 N.	111.46 W.	5	...	...	3.5G	III	G	SEPT. 29	07 P.M. MST
OCT. 7	09	26	02.6	43.00 N.	111.07 W.	5	...	...	3.0G	IV	G	OCT. 7	02 A.M. MST
OCT. 8	09	53	32.1	42.62 N.	111.47 W.	7	...	...	3.5U	IV	U	OCT. 8	02 A.M. MST
OCT. 8	10	06	59.0	42.62 N.	111.47 W.	7	...	...	3.8U	V	U	OCT. 8	03 A.M. MST
OCT. 8	16	04	09.0	42.63 N.	111.49 W.	7	...	...	3.2U	FELT	U	OCT. 8	09 A.M. MST
OCT. 14	04	10	24.3	42.59 N.	111.43 W.	7	4.6	...	4.7U	VI	U	OCT. 13	09 P.M. MST
OCT. 14	06	28	46.7	42.58 N.	111.43 W.	7	...	...	3.9U	...	U	OCT. 13	11 P.M. MST
OCT. 14	07	33	01.0	42.61 N.	111.44 W.	7	...	...	3.3U	...	U	OCT. 14	00 A.M. MST
OCT. 14	10	40	15.4	42.58 N.	111.40 W.	7	...	...	3.6U	...	U	OCT. 14	03 A.M. MST
OCT. 14	10	56	30.8	42.57 N.	111.42 W.	7	...	...	3.6U	...	U	OCT. 14	03 A.M. MST
OCT. 14	11	03	55.0	42.58 N.	111.43 W.	7	...	...	3.6U	...	U	OCT. 14	04 A.M. MST
OCT. 14	11	09	29.5	42.60 N.	111.44 W.	7	...	...	4.1U	...	U	OCT. 14	04 A.M. MST
OCT. 14	12	21	42.9	42.58 N.	111.43 W.	7	...	...	3.4U	...	U	OCT. 14	05 A.M. MST
OCT. 14	23	44	54.4	42.60 N.	111.43 W.	7	...	...	3.5U	...	U	OCT. 14	04 P.M. MST
DEC. 23	09	23	49.4	42.61 N.	111.40 W.	5	...	...	3.1G	...	G	DEC. 23	02 A.M. MST
DEC. 24	15	11	20.1	42.12 N.	112.56 W.	5	...	...	3.3U	III	G	DEC. 24	08 A.M. MST
DEC. 29	03	57	01.7	44.22 N.	114.77 W.	1	...	...	3.1D	...	D	DEC. 28	08 P.M. MST
ILLINOIS													
MAR. 27	04	48	49.6	38.74 N.	88.69 W.	15	...	...	...	...	S	MAR. 26	10 P.M. CST
JULY 1	00	40	39.6	39.34 N.	89.67 W.	5	...	...	...	...	S	JUNE 30	06 P.M. CST
AUG. 11	10	32	38.8	37.25 N.	88.73 W.	5	...	...	3.0G	III	S	AUG. 11	04 A.M. CST
KANSAS													
SEPT. 3	10	55	20.5	38.79 N.	98.89 W.	11	...	...	2.5C	IV	C	SEPT. 3	04 A.M. CST
KENTUCKY													
APR. 7	05	44	59.2	38.5 N.	83.6 W.		...	...	1.6I	FELT	I	APR. 7	00 A.M. EST
MAINE													
JAN. 21	00	39	55.9	46.82 N.	69.49 W.	6	...	...	2.9J	...	J	JAN. 20	07 P.M. EST
MAR. 3	02	45	12.6	44.22 N.	68.67 W.	0	...	...	2.1J	...	J	MAR. 2	09 P.M. EST
MAR. 26	14	57	39.8	44.54 N.	69.53 W.	7	...	...	2.4J	FELT	J	MAR. 26	09 A.M. EST
MAR. 28	06	28	37.8	44.63 N.	69.93 W.	0	...	...	2.3J	...	J	MAR. 28	01 A.M. EST
MAY 14	06	49	07.2	44.01 N.	70.49 W.	10	...	...	2.5J	...	J	MAY 14	01 A.M. EST
MAY 17	13	44	32.4	43.97 N.	70.45 W.	3	...	...	2.5J	...	J	MAY 17	08 A.M. EST
JULY 15	07	27	55.4	46.08 N.	69.02 W.	6	...	...	3.0J	...	J	JULY 15	02 A.M. EST
OCT. 16	03	55	24.0	45.43 N.	68.80 W.	2	...	...	2.7J	...	J	OCT. 15	10 P.M. EST
MASSACHUSETTS													
JAN. 27	18	50	04.7	41.88 N.	70.95 W.	1	...	...	3.0J	IV	J	JAN. 27	01 P.M. EST
OCT. 27	20	27	26.3	42.75 N.	70.16 W.	9	...	...	2.9J	...	J	OCT. 27	03 P.M. EST
OCT. 28	02	20	08.7	42.78 N.	70.20 W.	10	...	...	2.2J	...	J	OCT. 27	09 P.M. EST
NOV. 1	03	59	23.4	42.71 N.	70.21 W.	9	...	...	2.5J	...	J	OCT. 31	10 P.M. EST
NOV. 1	04	38	09.3	42.78 N.	70.25 W.	10	...	...	2.2J	...	J	OCT. 31	11 P.M. EST
NOV. 1	06	25	57.0	42.06 N.	70.61 W.	8	...	...	2.3J	...	J	NOV. 1	01 A.M. EST
NOV. 9	03	42	18.9	42.54 N.	72.20 W.	11	...	...	2.3J	...	J	NOV. 8	10 P.M. EST
MISSOURI													
FEB. 11	02	54	24.7	36.61 N.	89.60 W.	7	...	...	2.8S	FELT	S	FEB. 10	08 P.M. CST
FEB. 26	05	02	59.2	36.49 N.	89.53 W.	6	...	...	...	...	S	FEB. 25	11 P.M. CST
JULY 3	04	58	48.9	36.59 N.	89.96 W.	14	...	...	2.4S	FELT	S	JULY 2	10 P.M. CST
SEPT. 6	21	22	53.4	36.56 N.	89.62 W.	4	...	...	2.5K	...	S	SEPT. 6	03 P.M. CST
SEPT. 7	03	31	56.8	36.23 N.	89.88 W.	4	...	...	2.7K	...	S	SEPT. 6	09 P.M. CST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
MISSOURI--Continued													
OCT. 2	23	43	50.6	36.55 N.	89.65 W.	11	...	...	2.9K	...	S	OCT. 2	05 P.M. CST
NOV. 24	12	07	52.2	36.53 N.	89.62 W.	8	...	...	2.6K	...	K	NOV. 24	06 A.M. CST
MONTANA													
FEB. 10	12	02	58.1	44.98 N.	111.87 W.	9	...	...	2.8D	...	D	FEB. 10	05 A.M. MST
FEB. 20	09	08	49.6	46.56 N.	112.09 W.	5	...	...	2.6G	FELT	G	FEB. 20	02 A.M. MST
FEB. 22	10	43	54.7	48.02 N.	114.04 W.	18	...	...	3.1G	IV	D	FEB. 22	03 A.M. MST
MAR. 12	07	39	13.2	46.92 N.	112.86 W.	5	...	...	3.6G	...	G	MAR. 12	00 A.M. MST
MAR. 21	11	42	10.5	44.92 N.	112.09 W.	19	...	...	3.0D	...	D	MAR. 21	04 A.M. MST
MAR. 21	14	13	43.9	44.71 N.	111.73 W.	19	...	...	2.6D	...	D	MAR. 21	07 A.M. MST
MAR. 26	06	26	24.9	45.59 N.	113.80 W.	9	...	...	2.8D	...	D	MAR. 25	11 P.M. MST
MAY 15	19	28	19.1	47.01 N.	112.98 W.	5	...	...	3.3G	IV	G	MAY 15	12 P.M. MST
MAY 22	09	10	41.6	44.70 N.	111.11 W.	18	...	...	2.8D	...	D	MAY 22	02 A.M. MST
JUNE 6	00	57	23.8	47.52 N.	114.87 W.	1	...	...	2.6D	...	D	JUNE 5	05 P.M. MST
JULY 6	09	32	49.0	44.75 N.	111.70 W.	5	...	...	3.3D	...	G	JULY 6	02 A.M. MST
AUG. 5	01	48	16.5	47.85 N.	114.35 W.	5	...	...	2.5G	FELT	G	AUG. 4	05 P.M. PST
AUG. 8	07	48	07.4	47.93 N.	114.36 W.	5	...	...	2.3D	FELT	G	AUG. 7	11 P.M. PST
AUG. 8	07	49	23.1	47.93 N.	114.34 W.	5	...	...	2.8G	FELT	G	AUG. 7	11 P.M. PST
AUG. 8	21	19	09.7	44.69 N.	112.95 W.	12	...	...	2.5D	...	D	AUG. 8	02 P.M. MST
AUG. 11	14	55	36.6	44.75 N.	111.17 W.	28	...	...	2.6D	...	D	AUG. 11	07 A.M. MST
SEPT. 19	23	40	41.8	44.75 N.	111.16 W.	18	...	...	3.0D	...	D	SEPT. 19	04 P.M. MST
OCT. 8	23	21	35.1	44.80 N.	111.39 W.	15	...	...	2.5D	...	D	OCT. 8	04 P.M. PST
OCT. 21	06	05	28.2	44.72 N.	111.83 W.	5	...	...	4.4G	IV	G	OCT. 20	11 P.M. MST
OCT. 21	22	40	19.5	44.71 N.	111.80 W.	19	...	...	3.0D	...	D	OCT. 21	03 P.M. MST
OCT. 23	12	28	43.5	47.15 N.	112.71 W.	5	...	...	3.6G	...	G	OCT. 23	05 A.M. MST
OCT. 26	04	52	07.5	44.71 N.	111.76 W.	19	...	...	2.5D	...	D	OCT. 25	09 P.M. MST
OCT. 26	08	26	29.9	44.75 N.	111.75 W.	5	...	...	4.6G	IV	G	OCT. 26	01 A.M. MST
NOV. 4	09	58	29.9	44.72 N.	111.72 W.	5	...	...	4.2G	IV	G	NOV. 4	02 A.M. MST
NOV. 4	14	38	18.6	44.71 N.	111.79 W.	19	...	...	2.8D	...	D	NOV. 4	07 A.M. MST
NOV. 19	15	13	38.8	46.27 N.	111.94 W.	9	...	...	2.6D	...	D	NOV. 19	08 A.M. MST
NOV. 26	20	02	04.3	46.27 N.	111.99 W.	5	...	...	3.4G	...	G	NOV. 26	01 P.M. MST
DEC. 1	04	48	51.2	45.82 N.	111.90 W.	3	...	...	2.9D	...	D	NOV. 30	09 P.M. MST
DEC. 15	15	16	05.8	44.80 N.	111.56 W.	18	...	...	2.6D	...	D	DEC. 15	08 A.M. MST
DEC. 30	06	09	24.8	44.70 N.	111.07 W.	16	...	...	3.0D	...	D	DEC. 29	11 P.M. MST
DEC. 30	16	39	12.8	44.70 N.	111.08 W.	17	...	...	2.9D	...	D	DEC. 30	09 A.M. MST
DEC. 31	07	56	53.3	44.71 N.	111.07 W.	18	...	...	2.7D	...	D	DEC. 31	00 A.M. MST
NEVADA													
JAN. 28	16	00	00.1	37.09 N.	116.05 W.	0	5.9	4.5	5.6B	...	E	JAN. 28	08 A.M. PST
JAN. 28	22	48	44.6	38.62 N.	118.21 W.	5	...	...	3.8B	...	G	JAN. 28	02 P.M. PST
JAN. 28	22	50	43.6	38.62 N.	118.09 W.	5	...	...	4.4B	V	G	JAN. 28	02 P.M. PST
JAN. 28	22	51	02.1	38.54 N.	118.07 W.	5	...	...	4.6B	V	G	JAN. 28	02 P.M. PST
JAN. 28	22	59	03.6	38.61 N.	118.18 W.	5	...	...	3.7B	FELT	G	JAN. 28	02 P.M. PST
FEB. 12	14	55	00.1	37.22 N.	116.46 W.	0	5.4	...	5.4B	...	E	FEB. 12	06 A.M. PST
FEB. 12	15	25	00.1	37.35 N.	116.32 W.	0	5.6	...	5.5B	...	E	FEB. 12	07 A.M. PST
APR. 15	21	52	09.1	38.05 N.	118.57 W.	7	4.5	...	5.1B	IV	B	APR. 15	01 P.M. PST
APR. 17	18	00	00.1	37.02 N.	116.01 W.	0	4.5	...	4.4B	...	E	APR. 17	10 A.M. PST
APR. 25	18	05	00.1	37.26 N.	116.42 W.	0	5.4	...	5.4B	...	E	APR. 25	10 A.M. PST
MAY 6	20	00	00.1	37.12 N.	116.13 W.	0	4.3	...	4.4B	...	E	MAY 6	12 P.M. PST
MAY 7	18	17	00.1	37.07 N.	116.04 W.	0	5.7	4.2	5.4B	...	E	MAY 7	10 A.M. PST
MAY 12	19	29	24.5	37.27 N.	115.08 W.	10	...	...	4.0B	...	G	MAY 12	11 A.M. PST
MAY 22	01	23	28.4	41.34 N.	119.84 W.	11	...	...	3.4B	...	B	MAY 21	05 P.M. PST
MAY 28	03	25	58.8	38.06 N.	118.60 W.	6	...	...	3.5P	...	P	MAY 27	07 P.M. PST
JUNE 1	11	02	01.0	36.00 N.	114.82 W.	0	...	...	2.6G	IV	G	JUNE 1	03 A.M. PST
JUNE 16	14	00	00.8	37.11 N.	116.02 W.	0	...	...	4.3B	...	E	JUNE 16	06 A.M. PST
JUNE 24	14	15	00.1	37.24 N.	116.37 W.	0	5.6	4.5	5.6B	...	E	JUNE 24	06 A.M. PST
JULY 6	02	10	43.5	37.69 N.	115.05 W.	3	4.1	...	4.2G	III	G	JULY 5	06 P.M. PST
JULY 29	20	05	00.0	37.10 N.	116.07 W.	0	4.5	...	4.6B	...	E	JULY 29	12 P.M. PST
AUG. 5	14	00	00.0	37.08 N.	116.01 W.	0	5.7	4.2	5.4B	...	E	AUG. 5	06 A.M. PST
AUG. 11	15	00	00.0	37.19 N.	116.05 W.	0	...	...	3.3G	...	E	AUG. 11	07 A.M. PST
AUG. 28	08	26	56.8	38.67 N.	118.82 W.	9	...	...	3.6B	...	B	AUG. 28	00 A.M. PST
AUG. 29	21	08	03.8	38.17 N.	118.37 W.	10	...	...	4.0B	...	B	AUG. 29	01 P.M. PST
AUG. 30	09	52	22.8	38.17 N.	118.36 W.	12	...	...	3.5B	...	B	AUG. 30	01 A.M. PST
AUG. 30	09	52	23.2	38.17 N.	118.44 W.	5	...	...	3.5B	...	B	AUG. 30	01 A.M. PST
SEPT. 2	14	00	00.0	37.02 N.	116.02 W.	0	...	...	3.3G	...	E	SEPT. 2	06 A.M. PST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)		Long (°)		Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
NEVADA--Continued															
SEPT. 2	22	51	06.2	38.08	N.	117.92	W.	5	...	...	3.3P	...	G	SEPT. 2	02 P.M. PST
SEPT. 23	16	00	00.0	37.21	N.	116.21	W.	0	4.9	...	4.8B	...	E	SEPT. 23	08 A.M. PST
SEPT. 23	17	00	00.0	37.17	N.	116.09	W.	0	4.9	...	4.8B	...	E	SEPT. 23	09 A.M. PST
SEPT. 24	07	40	24.6	37.87	N.	118.14	W.	17	5.0	4.6	5.5B	V	B	SEPT. 23	11 P.M. PST
SEPT. 29	13	30	00.1	37.09	N.	116.04	W.	0	...	...	4.1B	...	E	SEPT. 29	05 A.M. PST
OCT. 1	01	33	35.9	37.87	N.	118.17	W.	15	...	...	4.1B	...	B	SEPT. 30	05 P.M. PST
OCT. 4	02	23	59.7	37.87	N.	118.14	W.	16	...	...	3.9B	...	B	OCT. 3	06 P.M. PST
NOV. 12	05	26	46.9	37.89	N.	118.07	W.	21	...	...	3.9B	...	B	NOV. 11	09 P.M. PST
NOV. 12	19	17	00.1	37.02	N.	116.03	W.	0	4.4	...	4.3B	...	E	NOV. 12	11 A.M. PST
DEC. 7	09	43	49.6	36.02	N.	114.83	W.	5	...	...	3.3G	II	G	DEC. 7	01 A.M. PST
DEC. 10	15	20	00.0	37.03	N.	116.07	W.	0	4.6	...	4.7B	...	E	DEC. 10	07 A.M. PST
DEC. 19	04	31	15.3	37.13	N.	116.01	W.	6	...	...	3.2P	...	P	DEC. 18	08 P.M. PST
DEC. 19	17	38	48.3	36.85	N.	115.32	W.	6	...	...	3.0P	...	P	DEC. 19	09 A.M. PST
DEC. 28	19	06	24.8	38.03	N.	118.42	W.	8	4.7	...	4.9B	IV	B	DEC. 28	11 A.M. PST
NEW HAMPSHIRE															
JAN. 19	00	14	42.7	43.51	N.	71.62	W.	7	4.5	...	4.5V	VI	J	JAN. 18	07 P.M. EST
JAN. 27	16	43	14.5	43.54	N.	71.61	W.	9	...	...	2.9J	V	J	JAN. 27	11 A.M. EST
FEB. 15	20	13	46.5	43.09	N.	71.49	W.	2	...	...	2.1J	FELT	J	FEB. 15	03 P.M. EST
AUG. 12	16	59	43.2	43.54	N.	71.93	W.	13	...	...	2.6J	...	J	AUG. 12	11 A.M. EST
DEC. 1	22	52	22.9	43.62	N.	71.52	W.	6	...	...	3.0J	IV	J	DEC. 1	05 P.M. EST
DEC. 1	23	05	01.6	43.61	N.	71.53	W.	2	...	...	2.2J	FELT	J	DEC. 1	06 P.M. EST
NEW JERSEY															
APR. 12	22	14	31.2	40.05	N.	74.82	W.	7	...	...	2.4L	V	L	APR. 12	05 P.M. EST
NEW MEXICO															
MAR. 16	11	03	02.7	35.36	N.	103.27	W.	5	...	...	3.1T	III	G	MAR. 16	04 A.M. MST
MAY 18	06	00	08.5	34.17	N.	106.95	W.	9	...	...	2.8G	IV	G	MAY 17	11 P.M. MST
MAY 18	06	08	38.4	34.20	N.	106.90	W.	6	...	...	2.8G	IV	G	MAY 17	11 P.M. MST
MAY 24	06	32	51.7	34.17	N.	106.95	W.	6	...	...	2.9G	FELT	G	MAY 23	11 P.M. MST
MAY 31	09	37	08.5	35.10	N.	106.80	W.	6	...	...	2.0G	IV	G	MAY 31	02 A.M. MST
SEPT. 20	03	55	17.2	33.95	N.	107.06	W.	11	...	...	2.9G	IV	G	SEPT. 19	08 P.M. MST
OCT. 7	12	41	25.9	34.31	N.	106.82	W.	4	...	...	2.4G	FELT	G	OCT. 7	05 A.M. MST
NOV. 3	17	54	11.7	35.32	N.	108.74	W.	5	...	...	3.0G	...	D	NOV. 3	10 A.M. MST
NOV. 13	09	42	47.6	36.69	N.	106.71	W.	4	...	...	2.7D	...	D	NOV. 13	02 A.M. MST
NEW YORK															
AUG. 31	10	16	58.2	43.21	N.	74.20	W.	4	...	...	2.6L	III	L	AUG. 31	05 A.M. EST
OCT. 23	05	09	55.1	44.10	N.	73.54	W.	0	...	...	2.5L	...	L	OCT. 23	00 A.M. EST
NORTH DAKOTA															
MAR. 9	13	10	50.1	48.51	N.	104.03	W.	18	...	...	3.3Q	III	Q	MAR. 9	06 A.M. MST
OKLAHOMA															
JAN. 15	09	52	17.0	35.71	N.	98.03	W.	5	...	...	2.7T	...	T	JAN. 15	03 A.M. CST
MAR. 13	01	41	49.9	35.70	N.	98.04	W.	5	...	...	2.5T	...	T	MAR. 12	07 P.M. CST
MAY 3	07	54	48.7	33.99	N.	96.47	W.	5	...	...	3.1T	VI	T	MAY 3	01 A.M. CST
AUG. 18	10	18	56.9	34.47	N.	96.23	W.	5	...	...	2.7T	...	T	AUG. 18	04 A.M. CST
SEPT. 8	12	35	10.8	34.01	N.	97.34	W.	5	...	...	2.5T	...	T	SEPT. 8	06 A.M. CST
DEC. 14	21	49	55.0	34.46	N.	97.38	W.	5	...	...	2.7T	...	T	DEC. 14	03 P.M. CST
DEC. 19	05	15	42.9	34.89	N.	97.58	W.	5	...	...	2.9T	...	T	DEC. 18	11 P.M. CST
DEC. 22	17	42	53.7	35.40	N.	97.93	W.	5	...	...	2.8T	...	T	DEC. 22	11 A.M. CST
OREGON															
NOV. 21	04	57	32.8	45.90	N.	122.89	W.	22	...	...	2.5G	FELT	G	NOV. 20	08 P.M. PST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
OREGON--OFF THE COAST													
FEB. 17	05	37	57.4	43.37 N.	126.51 W.	10	4.1	...	...	...	G	FEB. 16	09 P.M. PST
MAR. 23	11	32	10.6	44.26 N.	129.29 W.	10	4.3	4.2	...	...	G	MAR. 23	03 A.M. PST
MAR. 23	11	47	21.5	44.26 N.	129.54 W.	10	4.1	...	...	...	G	MAR. 23	03 A.M. PST
MAY 12	11	16	27.8	43.37 N.	126.69 W.	10	4.4	...	...	...	G	MAY 12	03 A.M. PST
MAY 17	01	45	28.2	43.73 N.	127.33 W.	10	4.3	...	...	...	G	MAY 16	05 P.M. PST
JUNE 10	16	24	44.4	43.49 N.	127.07 W.	10	4.9	4.7	...	...	G	JUNE 10	08 A.M. PST
JULY 2	03	30	24.1	42.71 N.	126.62 W.	10	4.2	...	...	...	G	JULY 1	07 P.M. PST
JULY 13	08	24	22.6	43.26 N.	126.41 W.	10	4.8	4.0	...	...	G	JULY 13	00 A.M. PST
JULY 26	13	05	49.0	43.91 N.	128.38 W.	10	4.8	4.5	...	...	G	JULY 26	05 A.M. PST
JULY 26	14	55	18.7	44.03 N.	128.48 W.	10	4.3	3.7	...	...	G	JULY 26	06 A.M. PST
JULY 27	04	49	59.7	43.94 N.	128.33 W.	10	4.8	5.1	...	...	G	JULY 26	08 P.M. PST
JULY 27	04	51	44.1	43.94 N.	128.38 W.	10	5.0	...	...	...	G	JULY 26	08 P.M. PST
JULY 27	06	02	03.9	43.95 N.	128.36 W.	10	4.9	4.5	...	...	G	JULY 26	10 P.M. PST
JULY 27	06	16	55.2	43.96 N.	128.18 W.	10	5.1	5.1	...	...	G	JULY 26	10 P.M. PST
JULY 27	06	22	58.4	43.88 N.	128.44 W.	10	5.2	4.8	...	...	G	JULY 26	10 P.M. PST
JULY 27	06	46	13.7	44.32 N.	128.87 W.	10	4.1	3.8	...	...	G	JULY 26	10 P.M. PST
JULY 27	07	22	12.6	43.96 N.	128.22 W.	10	4.4	...	...	...	G	JULY 26	11 P.M. PST
JULY 27	09	02	36.0	43.89 N.	128.36 W.	10	4.5	4.2	...	...	G	JULY 27	01 A.M. PST
AUG. 13	02	23	57.1	43.91 N.	128.30 W.	10	3.7	...	...	...	G	AUG. 12	06 P.M. PST
AUG. 13	11	27	05.4	44.02 N.	128.77 W.	10	3.9	...	...	...	G	AUG. 13	03 A.M. PST
SEPT. 18	07	31	33.5	43.57 N.	127.18 W.	10	4.0	...	...	...	G	SEPT. 17	11 P.M. PST
OCT. 17	05	00	32.3	44.65 N.	130.07 W.	10	4.8	4.8	...	...	G	OCT. 16	09 P.M. PST
NOV. 13	04	24	18.8	44.12 N.	128.99 W.	10	4.2	...	...	...	G	NOV. 12	08 P.M. PST
NOV. 13	15	44	45.9	44.41 N.	129.51 W.	10	5.2	5.2	...	...	G	NOV. 13	07 A.M. PST
NOV. 14	00	00	31.8	44.42 N.	129.35 W.	10	4.8	4.6	...	...	G	NOV. 13	04 P.M. PST
NOV. 14	03	50	36.9	43.67 N.	127.69 W.	10	4.3	3.5	...	...	G	NOV. 13	07 P.M. PST
DEC. 1	03	32	59.6	43.53 N.	126.77 W.	10	4.6	4.1	...	...	G	NOV. 30	07 P.M. PST
DEC. 12	11	18	16.9	42.71 N.	126.32 W.	10	4.8	...	...	...	G	DEC. 12	03 A.M. PST
PENNSYLVANIA													
FEB. 3	04	28	20.6	40.21 N.	79.05 W.	2	...	...	2.6X	III	X	FEB. 2	11 P.M. EST
MAY 12	18	29	33.0	40.41 N.	77.96 W.	0	...	...	3.0X	...	G	MAY 12	01 P.M. EST
RHODE ISLAND													
NOV. 6	03	50	07.6	41.79 N.	71.56 W.	2	...	...	1.8J	IV	J	NOV. 5	10 P.M. EST
SOUTH CAROLINA													
JAN. 28	04	52	51.9	32.98 N.	81.39 W.	7	...	...	3.4G	...	G	JAN. 27	11 P.M. EST
MAR. 1	03	33	13.6	32.94 N.	80.14 W.	7	...	...	3.0G	IV	G	FEB. 28	10 P.M. EST
MAR. 2	16	48	08.8	34.34 N.	81.35 W.	2	...	...	2.5G	III	Y	MAR. 2	11 A.M. EST
APR. 13	09	25	20.1	34.31 N.	81.33 W.	2	...	...	2.7G	III	Y	APR. 13	04 A.M. EST
APR. 14	05	29	35.4	34.31 N.	81.34 W.	2	...	...	2.6Y	FELT	Y	APR. 14	00 A.M. EST
MAY. 7	07	37	53.8	34.43 N.	81.40 W.	0	...	...	2.1Y	III	Y	MAY 7	02 A.M. EST
JULY 16	14	16	02.9	34.32 N.	81.55 W.	2	...	...	3.1K	III	Y	JULY 16	09 A.M. EST
SEPT. 2	21	52	45.5	34.96 N.	82.90 W.	3	...	...	3.0K	...	Y	SEPT. 2	04 P.M. EST
SOUTH DAKOTA													
JULY 11	19	42	28.4	44.01 N.	96.72 W.	5	...	...	3.6T	V	G	JULY 11	01 P.M. CST
NOV. 15	02	58	22.9	43.01 N.	97.85 W.	5	...	...	4.3G	V	G	NOV. 14	08 P.M. CST
TENNESSEE													
JAN. 2	02	00	26.2	35.18 N.	86.43 W.	13	...	...	2.9G	V	K	JAN. 1	08 P.M. CST
JAN. 30	12	39	12.9	35.80 N.	83.96 W.	20	...	...	2.8K	...	K	JAN. 30	07 A.M. EST
APR. 13	13	04	13.3	36.51 N.	82.04 W.	3	...	...	3.0K	...	K	APR. 13	08 A.M. EST
APR. 17	01	22	54.9	35.91 N.	89.06 W.	5	...	...	2.8G	IV	K	APR. 16	07 P.M. CST
MAY 1	13	05	26.7	35.73 N.	89.70 W.	5	...	...	2.8K	FELT	K	MAY 1	07 A.M. CST
MAY 6	02	56	08.3	36.33 N.	89.47 W.	6	...	...	1.2K	FELT	K	MAY 5	08 P.M. CST
JUNE 2	11	55	45.4	36.46 N.	89.54 W.	1	...	...	2.6K	FELT	K	JUNE 2	05 A.M. CST
JULY 14	16	01	35.6	36.26 N.	89.45 W.	4	...	...	2.4K	FELT	K	JULY 14	10 A.M. CST
SEPT. 5	10	11	09.4	35.19 N.	84.51 W.	13	...	...	2.8G	IV	K	SEPT. 5	05 A.M. EST
SEPT. 24	21	57	42.5	35.68 N.	84.24 W.	13	...	...	3.0V	V	K	SEPT. 24	04 P.M. EST
SEPT. 24	22	19	16.9	35.68 N.	84.25 W.	8	...	...	3.4V	IV	K	SEPT. 24	05 P.M. EST
SEPT. 29	02	05	56.3	36.24 N.	89.42 W.	9	...	...	2.0K	FELT	K	SEPT. 28	08 P.M. CST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)	Long (°)	Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
TENNESSE--Continued													
SEPT. 29	02	06	28.0	36.26 N.	89.43 W.	7	...	...	2.8K	FELT	K	SEPT. 28	08 P.M. CST
OCT. 17	19	53	43.0	36.24 N.	89.42 W.	5	...	...	2.6K	III	K	OCT. 17	01 P.M. CST
OCT. 17	19	53	48.8	36.11 N.	89.58 W.	11	...	...	2.5K	...	K	OCT. 17	01 P.M. CST
NOV. 14	10	31	59.1	36.21 N.	82.88 W.	10	...	...	2.7K	...	K	NOV. 14	05 A.M. EST
DEC. 18	03	42	46.7	36.43 N.	89.51 W.	5	...	...	2.0K	FELT	K	DEC. 17	09 P.M. CST
TEXAS													
JAN. 4	16	56	08.1	31.18 N.	102.49 W.	5	...	...	3.9T	III	G	JAN. 4	10 A.M. CST
MAR. 28	23	24	21.3	28.83 N.	98.18 W.	4	...	...	3.0G	...	Z	MAR. 28	05 P.M. CST
APR. 26	08	31	47.7	33.02 N.	100.84 W.	5	...	...	2.8G	...	G	APR. 26	02 A.M. CST
OCT. 14	12	52	46.3	36.10 N.	102.57 W.	5	...	...	3.9G	IV	G	OCT. 14	06 A.M. CST
NOV. 28	02	36	48.5	33.00 N.	100.84 W.	5	...	...	3.3T	IV	G	NOV. 27	08 P.M. CST
UTAH													
JAN. 29	01	30	44.3	39.33 N.	111.12 W.	2	...	...	2.5U	...	U	JAN. 28	06 P.M. MST
JAN. 29	12	09	49.2	39.49 N.	112.18 W.	6	...	...	2.7U	...	U	JAN. 29	05 A.M. MST
FEB. 12	10	44	12.7	37.41 N.	112.57 W.	2	...	...	3.2U	IV	U	FEB. 12	03 A.M. MST
FEB. 15	19	52	30.5	39.20 N.	111.99 W.	1	...	...	2.8U	...	U	FEB. 15	12 P.M. MST
FEB. 25	20	20	04.2	39.60 N.	109.40 W.	0	...	...	2.9U	...	U	FEB. 25	01 P.M. MST
MAR. 5	05	50	22.9	37.37 N.	112.61 W.	2	...	...	3.3U	IV	U	MAR. 4	10 P.M. MST
MAR. 8	16	31	26.2	37.97 N.	112.16 W.	2	...	...	2.5U	...	U	MAR. 8	09 A.M. MST
MAR. 23	22	49	02.6	39.47 N.	112.00 W.	0	...	...	2.7U	...	U	MAR. 23	03 P.M. MST
APR. 17	06	00	12.5	38.22 N.	111.30 W.	9	...	...	3.0U	...	U	APR. 16	11 P.M. MST
MAY 18	10	51	21.9	39.71 N.	110.73 W.	0	...	...	2.9U	...	U	MAY 18	03 A.M. MST
MAY 24	12	13	26.6	38.71 N.	112.04 W.	5	4.7	...	4.0U	VI	U	MAY 24	05 A.M. MST
MAY 24	22	25	34.8	38.74 N.	112.00 W.	1	...	...	2.7U	...	U	MAY 24	03 P.M. MST
JUNE 20	14	32	52.0	41.50 N.	112.82 W.	9	...	...	2.6U	...	U	JUNE 20	07 A.M. MST
JULY 14	03	12	06.1	37.10 N.	113.82 W.	1	...	...	2.5U	...	U	JULY 13	08 P.M. MST
AUG. 23	04	58	23.0	37.57 N.	113.20 W.	3	...	...	3.3U	...	U	AUG. 22	09 P.M. MST
AUG. 25	13	29	09.4	38.01 N.	111.64 W.	7	...	...	2.7U	...	U	AUG. 25	06 A.M. MST
AUG. 29	12	07	54.3	40.88 N.	111.67 W.	5	...	...	2.7U	...	U	AUG. 29	05 A.M. MST
SEPT. 18	19	21	03.9	39.16 N.	111.91 W.	10	...	...	2.5U	...	U	SEPT. 18	12 P.M. MST
SEPT. 19	17	12	58.0	39.20 N.	111.94 W.	1	...	...	2.5U	...	U	SEPT. 19	10 A.M. MST
SEPT. 28	03	47	57.3	39.28 N.	111.15 W.	7	...	...	2.5U	...	U	SEPT. 27	08 P.M. MST
OCT. 24	12	10	20.5	38.53 N.	112.28 W.	0	...	...	2.6U	...	U	OCT. 24	05 A.M. MST
NOV. 25	01	27	59.8	39.33 N.	111.12 W.	0	...	...	2.6U	...	U	NOV. 24	06 P.M. MST
DEC. 9	14	44	20.4	39.31 N.	111.15 W.	5	...	...	2.8U	...	U	DEC. 9	07 A.M. MST
VERMONT													
MAR. 12	22	04	18.4	43.51 N.	71.64 W.	0	...	...	2.4J	...	J	MAR. 12	05 P.M. EST
VIRGINIA													
MAY 6	07	18	10.9	37.85 N.	77.58 W.	10	...	...	2.0V	II	V	MAY 6	02 A.M. EST
JUNE 16	18	40	58.6	38.13 N.	78.84 W.	11	...	...	2.1V	II	V	JUNE 16	01 P.M. EST
WASHINGTON													
JAN. 21	16	05	45.3	48.47 N.	121.70 W.	0	...	...	2.5G	FELT	W	JAN. 21	08 A.M. PST
JAN. 21	17	12	57.5	48.48 N.	121.71 W.	2	...	...	2.0G	FELT	W	JAN. 21	09 A.M. PST
JAN. 23	15	31	37.5	46.55 N.	121.41 W.	10	...	...	3.5G	...	W	JAN. 23	07 A.M. PST
JAN. 30	02	37	54.3	48.78 N.	122.70 W.	18	...	...	2.9G	FELT	W	JAN. 29	06 P.M. PST
MAR. 1	17	40	04.5	46.35 N.	122.25 W.	12	4.1	...	4.1G	V	W	MAR. 1	09 A.M. PST
APR. 14	07	22	43.4	47.65 N.	122.52 W.	26	...	...	3.1G	IV	W	APR. 13	11 P.M. PST
MAY 31	05	10	40.9	46.35 N.	122.23 W.	11	...	...	2.7W	FELT	W	MAY 30	09 P.M. PST
JUNE 4	07	44	55.8	47.71 N.	122.09 W.	7	...	...	2.5G	IV	W	JUNE 3	11 P.M. PST
JUNE 4	16	10	34.1	47.71 N.	122.12 W.	6	...	...	2.6G	IV	W	JUNE 4	08 A.M. PST
JULY 15	03	02	07.5	47.25 N.	119.95 W.	1	...	...	2.4W	III	W	JULY 14	07 P.M. PST
SEPT. 15	17	32	33.2	47.69 N.	122.03 W.	7	...	...	2.9W	IV	W	SEPT. 15	09 A.M. PST
SEPT. 26	10	09	23.9	46.87 N.	121.07 W.	4	...	...	2.9G	FELT	W	SEPT. 26	02 A.M. PST
WASHINGTON--OFF THE COAST													
FEB. 5	03	53	09.7	47.78 N.	128.35 W.	10	4.2	...	...	...	G	FEB. 4	07 P.M. PST

Table 1. *Summary of U. S. earthquakes for 1982*--Continued

Date (1982)	Origin time (UTC) hr	min	sec	Lat (°)		Long (°)		Depth (km)	Magnitude mb	MS	ML, Mn or MD	Maximum intensity	Hypocenter source	Local time Date	Hour
WASHINGTON--OFF THE COAST--Continued															
AUG. 26	21	57	27.1	48.00	N.	127.99	W.	10	4.3	...	...	...	G	AUG. 26	01 P.M. PST
NOV. 12	02	57	52.6	47.87	N.	128.73	W.	10	4.4	...	...	...	G	NOV. 11	06 P.M. PST
WEST VIRGINIA															
JUNE 23	16	17	34.1	37.87	N.	80.96	W.	11	...	...	2.5V	...	V	JUNE 23	11 A.M. EST
WYOMING															
FEB. 17	01	42	35.3	44.52	N.	110.62	W.	20	...	...	2.6D	...	D	FEB. 16	06 P.M. MST
MAR. 1	10	43	06.2	42.99	N.	111.04	W.	5	...	...	3.6G	V	G	MAR. 1	03 A.M. MST
MAY 1	04	57	55.9	44.81	N.	110.93	W.	19	...	...	2.9D	...	D	APR. 30	09 P.M. MST
MAY 9	21	07	36.5	44.64	N.	109.70	W.	11	...	...	3.4D	...	D	MAY 9	02 P.M. MST
MAY 21	01	14	35.7	44.78	N.	110.85	W.	5	...	...	3.3G	...	G	MAY 20	06 P.M. MST
MAY 22	23	50	41.1	44.72	N.	110.98	W.	15	...	...	2.8D	...	D	MAY 22	04 P.M. MST
JUNE 2	12	44	33.1	44.78	N.	110.85	W.	22	...	...	2.6D	...	D	JUNE 2	05 A.M. MST
JUNE 2	15	35	17.8	44.78	N.	110.90	W.	17	...	...	2.8D	...	D	JUNE 2	07 A.M. MST
JULY 10	01	19	54.8	44.19	N.	110.90	W.	5	...	...	3.0G	III	G	JULY 9	06 P.M. MST
AUG. 1	02	10	53.0	44.77	N.	110.83	W.	23	...	...	2.7D	...	D	JULY 31	07 P.M. MST
AUG. 23	13	59	54.7	44.82	N.	110.86	W.	10	...	...	2.9D	...	D	AUG. 23	06 A.M. MST
AUG. 25	00	10	37.0	44.42	N.	111.00	W.	6	...	...	2.7D	...	D	AUG. 24	05 P.M. MST
AUG. 25	00	17	44.5	44.39	N.	110.98	W.	13	...	...	2.7D	...	D	AUG. 24	05 P.M. MST
AUG. 31	22	02	18.5	42.72	N.	108.85	W.	5	...	...	3.2G	IV	G	AUG. 31	03 P.M. MST
SEPT. 9	17	20	11.9	44.81	N.	110.83	W.	19	...	...	2.6D	...	D	SEPT. 9	10 A.M. MST
OCT. 1	22	55	29.6	44.33	N.	110.85	W.	5	...	...	3.0G	IV	G	OCT. 1	03 P.M. MST
NOV. 7	19	42	39.5	45.02	N.	110.69	W.	12	...	...	2.7D	...	D	NOV. 7	12 P.M. MST
NOV. 8	01	18	29.3	44.78	N.	110.92	W.	5	...	...	3.2G	III	G	NOV. 7	06 P.M. MST
NOV. 8	01	25	12.1	44.84	N.	110.70	W.	10	...	...	2.7D	...	D	NOV. 7	06 P.M. MST
NOV. 10	03	40	41.1	44.48	N.	110.63	W.	0	...	...	3.4D	IV	D	NOV. 9	08 P.M. MST
NOV. 18	22	56	01.0	44.82	N.	110.88	W.	15	...	...	3.2D	...	D	NOV. 18	03 P.M. MST

NETWORK OPERATIONS

Alaska Earthquakes, 1982

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By some standards, the University of Alaska telemetered seismographic network did not fare well in 1982. Although over 2,000 earthquakes were located, because of cutbacks in federal funding, the seismographic network shrunk from about sixty stations in 1980, to about thirty-five in 1982. The signals from thirteen of these combination VHF, satellite, and ground communications links were recorded at the Geophysical Institute in Fairbanks (see fig. 21), and the remainder at a recording facility in Homer on the Kenai Peninsula. Added to these were signals recorded from cooperative stations operated by the NOAA Alaska Tsunami Warning Center at Palmer, along with some U.S. Geological Survey signals from their stations in south-central Alaska. We acknowledge and appreciate the sharing of their data. We try to reciprocate, whenever possible.

By comparing the 1980 map (fig. 22) with the accompanying map for 1982, (fig. 23) it can be seen that the University of Alaska has lost much of its capability to accurately locate earthquakes in the northwest part of Alaska, and that its location capability in the far-west part (the Seward Peninsula) has been practically wiped out (compared with several earlier years).

Nevertheless, it probably still stands as a landmark that a single state university can manage a telemetered seismographic network that extends over 1,700 km from Point Barrow (BRW) in the north, to Chirikof Island (CHI) to the south.

The year 1982 marked not only a decline in the number of operational stations for the Geophysical Institute, but it was also a disastrous year for some members of its staff. On April 16, a senior electronics engineer, a part-time student engineer, and a helicopter pilot flew into the side of a mountain on St. Lawrence Island while trying to remove some of the unfunded stations. Although none of the three were killed outright, all were severely injured. The student, who was afterward found to have suffered five cracked vertebrae and a broken arm (in addition to other injuries), spent the night trying to save the lives of the other two men. But by the time rescuers arrived by snow machine from the village of Savoonga the next day, the two men were dead.

The young man, Kelly McClure, who made such a heroic effort, is still a student at the University of Alaska, although he is missing fingers on both hands from frostbite resulting from the episode.

Shumagin Seismic Gap Eastern Aleutians Alaska Earthquakes, 1982

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Since 1973, Lamont-Doherty Geological Observatory (L-DGO) has operated a short-period high-gain seismic network in the Shumagin Islands region of the eastern Aleutians. The network is used for basic seismotectonic studies as well as for evaluating and forecasting seismic and volcanic hazards.

The Shumagin network consists of 14 stations plus four stations in the Pavlov volcano subarray. The stations consist of single short period vertical seismometers except for five short period three component stations, one intermediate period three component station and one three component force balance accelerometer. The analog signals from the high gain remote stations have a dynamic range of approximately 42 to 60 db and are transmitted via radio links to a central recording site at Sand Point. The seismic signals are digitized at 100 samples per second and 12 of the 32 channels are monitored by an event detector which starts the tape recorder when an event is declared. The event detector can be accessed from L-DGO via modem allowing the resetting of (STA)/(LTA) ratios and the reconfiguring of subnets. An analog tape recorder with a separate event detection algorithm works in parallel with the digital system and acts as the backup system.

Within the region of the Shumagin network there are also 12 strong-motion accelerographs (Kinemetrics SMA-1, 1g), 10 of which are co-located with seismic stations. These 10 SMA's are connected to the telemetry system so that a trigger signal is sent to the central recording site allowing us to know the exact time at which a SMA began recording a given earthquake.

Figure 24 shows the 557 events located by the Shumagin network in 1982. This seismicity is associated with the subduction of the Pacific plate beneath the North American plate. A small clustering of shallow seismicity (depth less than 40 km) occurs at the down dip end of the main thrust zone. A depth cross section where the earthquakes are projected on a plane striking north-northwest across the Shumagin Islands is shown in figure 25. There is seismic quiescence along the shallow part of the main thrust zone and a high level of activity at the lower edge of this locked zone. The deep seismicity defines a double-planed Benioff zone.

There was one felt event reported in 1982:

August 30, 1982 — 1330 GMT: located 90 km east of station SNK with a PDE depth of 35 km (the depth was not constrained by the local network). The event had a local magnitude of 5.2 and was felt in Sand Point, which is one of two towns located within the Shumagin net-

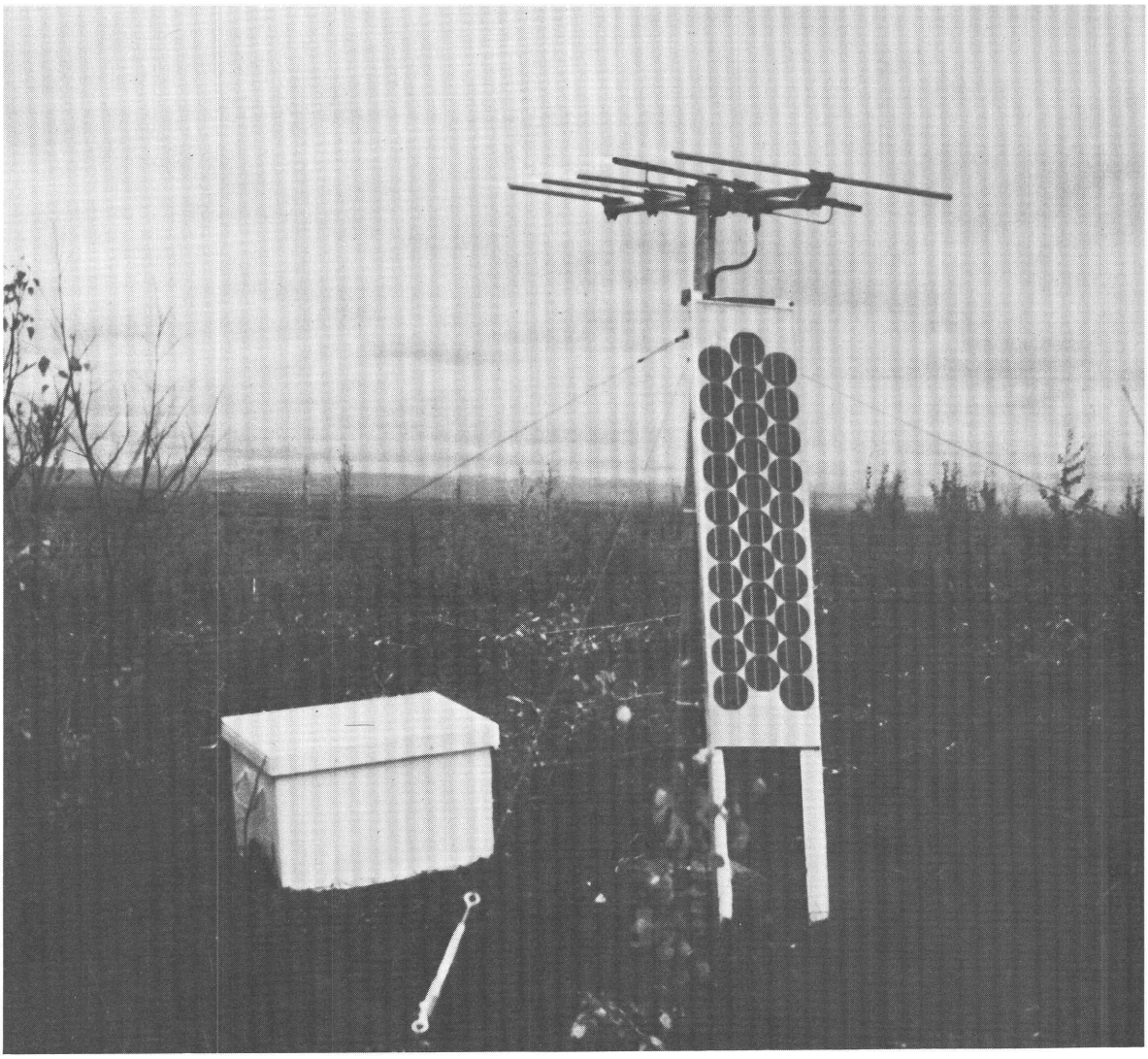

Figure 21. Typical seismographic installation in the Alaska network. This station is located on Clear Creek Butte (CCB) in the Tanana Valley south of Fairbanks. The white box contains the electronics package and the GEL/CEL batteries which power it. The batteries are kept charged (except during deep winter) by the photovoltaic panel attached to the antenna mast. The YAGI antenna is oriented to beam the VHF Signal directly to the Geophysical Institute (this station is a 1983 installation not indicated on the accompanying map for 1982).

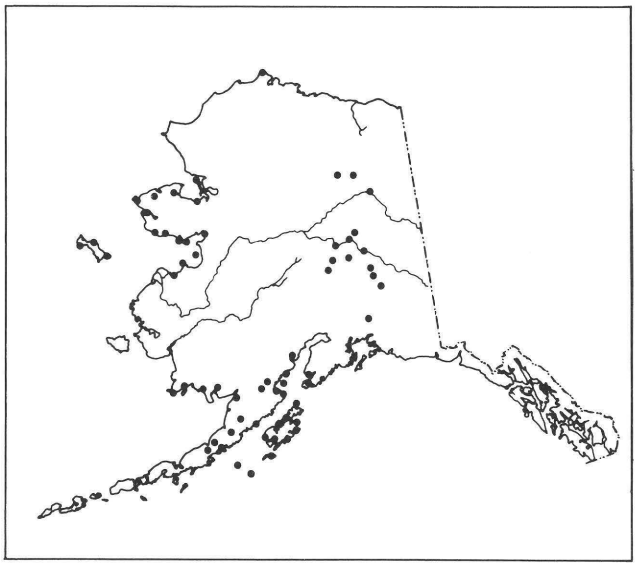

Figure 22. Alaska Geophysical Institute seismographic networks, in 1980.

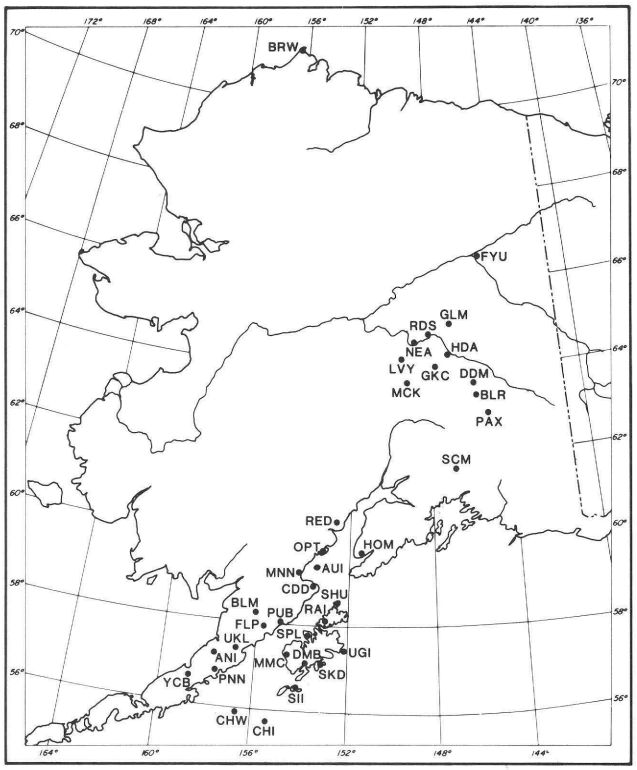

Figure 23. Telemetered seismographic stations operational through most of 1982. Three letters indicate station code.

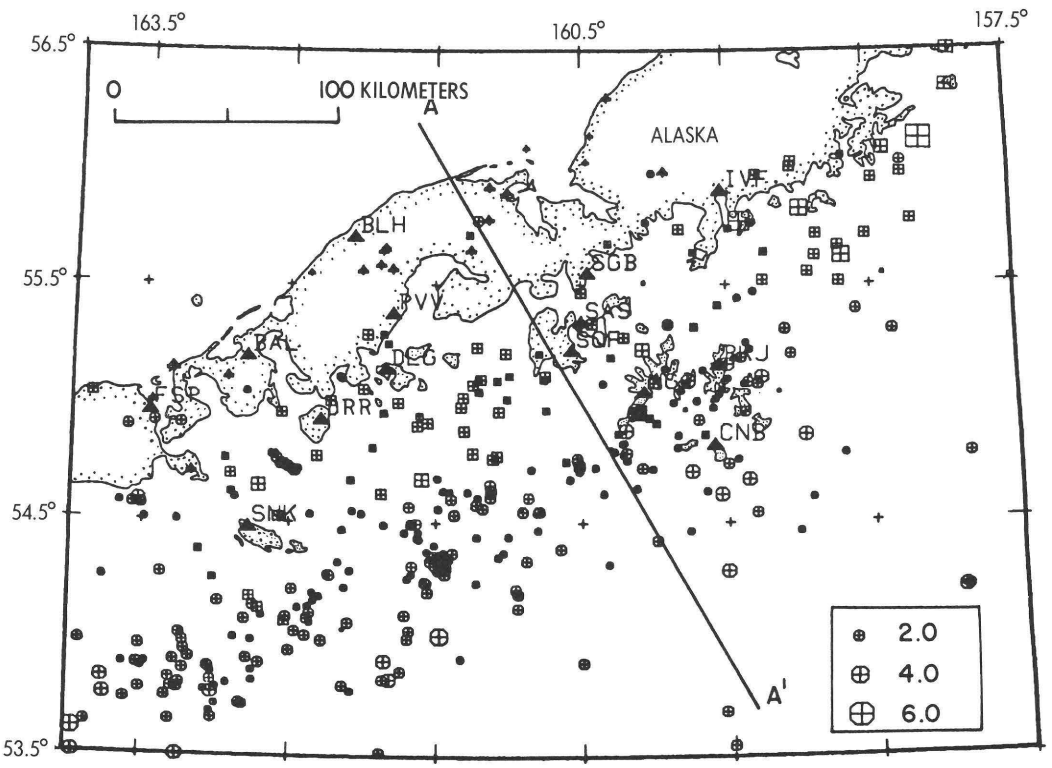

Figure 24. Seismicity located by the Shumagin network in 1982. The seismic stations are shown as solid triangles. Events less than 40 km deep are plotted as circles, those between 40 and 120 km as squares, and those greater than 120 km as open triangles.

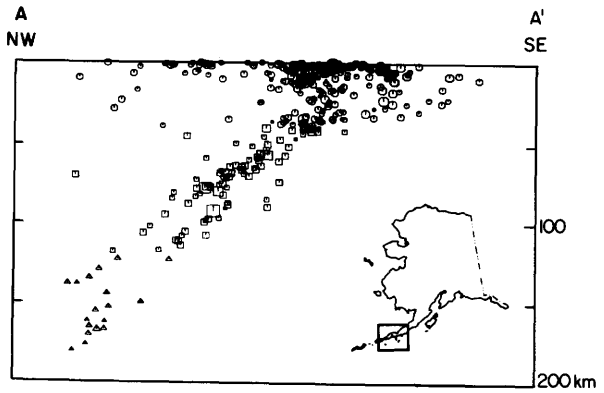

Figure 25. Cross section along line A -A' in figure 24. Location map for the network is shown in lower right corner. Symbols are the same as fig.24.

work. It occurred in area that has had a relatively high rate of seismicity for the past five years.

Southern Alaska Seismicity

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During 1982 the U.S. Geological Survey continued operating a network of high-gain, high-frequency seismographs in southern Alaska covering a region that extends from west of Cook Inlet to Juneau and northward across the Chugach Mountains (fig. 26). The principal objectives of this program are to study the seismotectonic processes occurring along a convergent plate margin and to assess the potential for damaging earthquakes and related hazards. The program is also concerned with monitoring for possible seismic precursors to a gap-filling rupture in the Yakataga seismic gap (fig. 26). This area is considered a likely site for a large ($M > 7$) earthquake (Lahr and others, 1980), possibly within the next two or three decades (McCann and others, 1980). Vertical-component instruments were operated at 56 sites, five of which also had horizontal north-south- and east-west-oriented components. For 1982, 5092 events were located using readings from the USGS stations and other regional seismographs operated by the NOAA Alaska Tsunami Warning Center, the Geophysical Institute of the University of Alaska, and the Canadian Department of Energy, Mines, and Resources. Details about instrumentation, station operation, and data processing procedures can be found in quarterly catalogs of earthquakes (for example, Fogleman and others, 1983).

The distribution of seismicity along southern coastal Alaska for 1982 is shown in figure 27. The magnitude threshold for completeness varies across the network. West of 145° W. longitude all shallow events of coda-duration magnitude 2.0 and larger are routinely located, but the threshold for completeness increases with depth and is about magnitude 3.0 for events below about 150 km. In this area the pattern is dominated by activity within the west-northwest-dipping Aleutian Benioff zone beneath and north of Cook inlet (fig. 28). Concentrations of shallow events around the southern Kenai Peninsula, around Anchorage, and along the volcanic arc west of Cook Inlet are a result of emphasis placed on locating crustal events smaller than magnitude 2.0 in these areas. East of Prince William Sound the relative rate of activity is much lower and events as small as magnitude 1.0 are routinely located in this area. Aside from a weakly active, north-northeast-dipping Benioff zone south of the Wrangell volcanoes (fig. 29), the activity in the eastern part of the network is confined to depths above about 35 km. The pronounced concentration of events north and east of Icy Bay is due to continuing aftershock activity from the 1979 St. Elias earthquake (see, for example, Stephens and others, 1980). More diffuse concentrations of activity are located around Waxell ridge about 100 km west of the St. Elias aftershock zone, beneath the Copper River Delta, along the Fairweather fault system north of Yakutat Bay, and along the Duke River/Denali fault system. Scattered activity occurred off shore across the continental margin with the larger events tending to occur near the outer edge of the margin. The distribution of seismicity within and adjacent to the Yakataga seismic gap is similar to that observed over the past several years (for example, Stephens, Fogelman, and others, 1984).

Nineteen of the shocks plotted in figure 27 have magnitudes of 4.5 m_b and larger (table 2), ten of which were located at depths below about 50 km in the Aleutian Benioff zone. The four largest shocks all have magnitudes of 5.0 m_b and include an event on July 14 located 186 km deep in the Aleutian Benioff zone west of southern Cook Inlet, one on February 27 located 53 km deep in the Benioff zone about 150 km north of Prince William Sound, and two shallow events on May 2 and 3 about 11 km deep located a few kilometers east of Icy Bay within the aftershock zone of the St. Elias earthquake. Thirty events had felt reports listed in the USGS Preliminary Determination of Epicenters (PDE). Eight of these events were felt at MM Intensity IV, including the deep shock on July 14. The event with the highest reported intensity, V, was a 4.8 m_b shock that occurred on May 5 about 20 km east of Anchorage at a depth of 50 km.

Among the interesting events which occurred during this time period are the two magnitude 5.0 m_b shocks that occurred near Icy Bay in May, the 4.8 m_b shock on May 5 east of Anchorage, and two moderate-sized earthquakes that occurred along the Fairweather fault system north of Yakutat Bay in August. Focal mechanisms determined for the Icy Bay events from regional P-wave first motions are compatible with low-angle thrusting on northward-dipping planes, similar to the mechanism inferred for the 1979 St. Elias mainshock. These events may have occurred on the same buried fault system that ruptured during the 1979 mainshock. Pronounced secondary aftershock activity followed the May events; in the 3-day period following the first shock 324 aftershocks of coda-duration magnitude 1.0 and larger were located, and 124 others occurred by the end of May. In contrast to this sequence, the May 5 shock near Anchorage was an isolated event. Earthquakes as small as magnitude 1.5 are commonly located in the area around Anchorage, but none were located within 10 km of the epicenter of the May 5 shock for periods of at least 1 month prior to and following the event. The focal mechanism for the May 5 event has a steeply dipping pressure axis and a west-northwest-striking tension axis aligned approximately downdip with respect to the Benioff zone. The two shocks that occurred on August 7 and August 25 north of Yakutat Bay had mag-

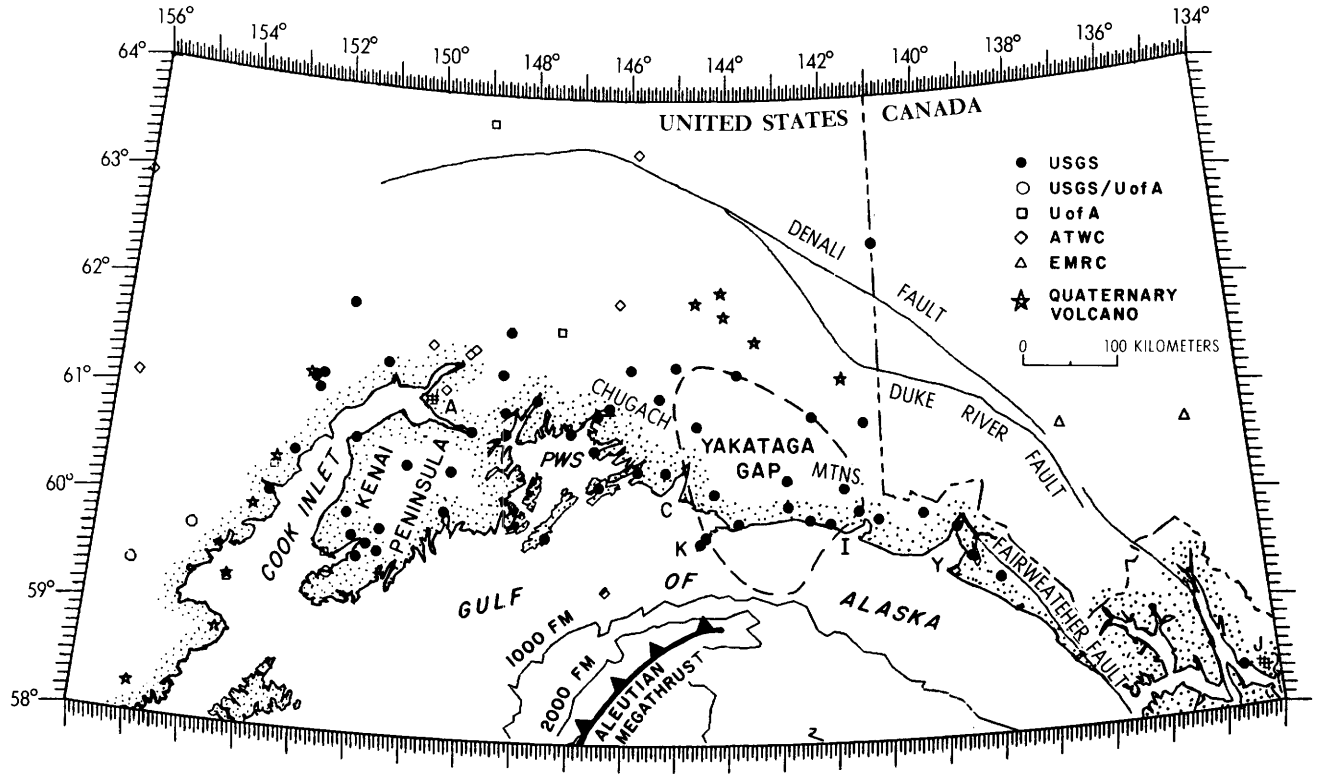

Figure 26. Map showing locations of high-gain, high-frequency seismograph stations in and around southern Alaska during 1982. Heavy dashed outline indicates approximate extent of Yakataga seismic gap. Institutions are as follows: USGS - U.S. Geological Survey, U of A - University of Alaska, ATWC - NOAA Alaska Tsunami Warning Center; EMRC - Canadian Department of Energy, Mines and Resources. A - Anchorage, C - Copper River Delta, I - Icy Bay, J - Juneau, K - Kayak Island, PWS - Prince William Sound, Y - Yukatat Bay. Stars indicate Quaternary volcanoes.

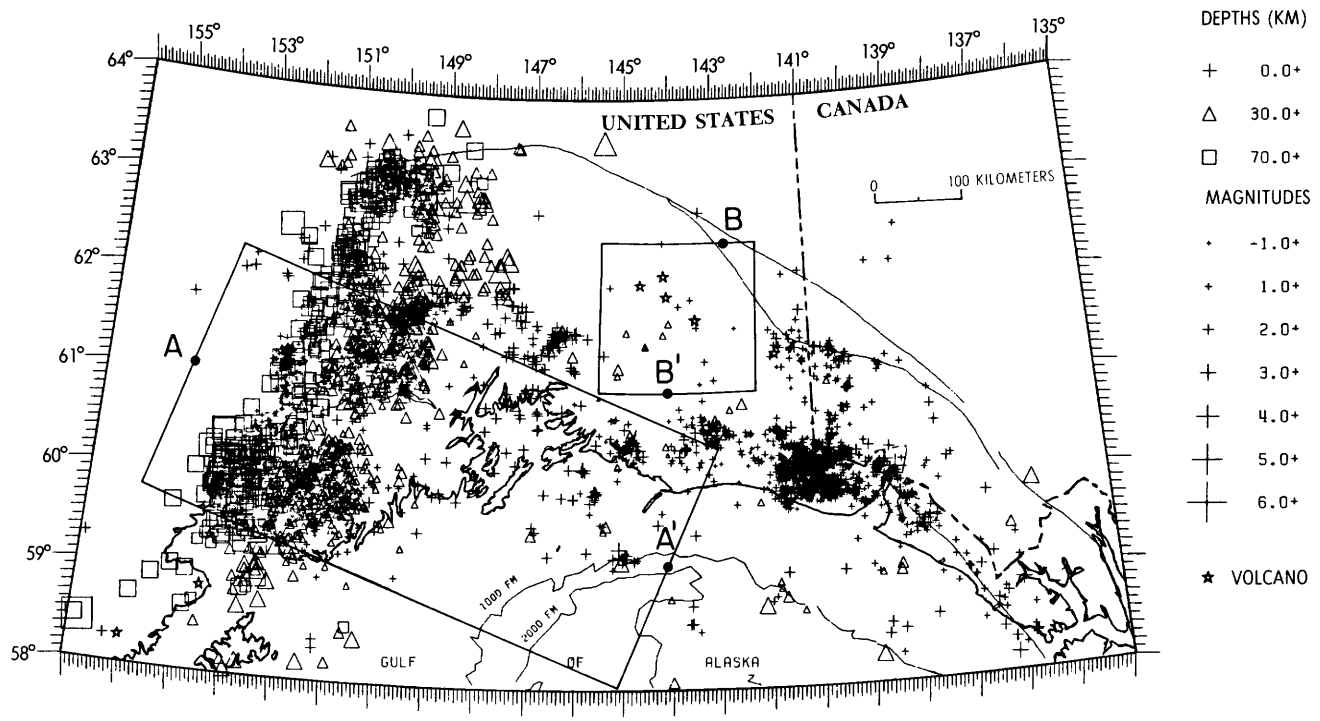

Figure 27. Distribution of earthquake epicenters determined by USGS regional network in southern Alaska for 1982. Boxes indicate areas included in cross section of figures 28 and 29.

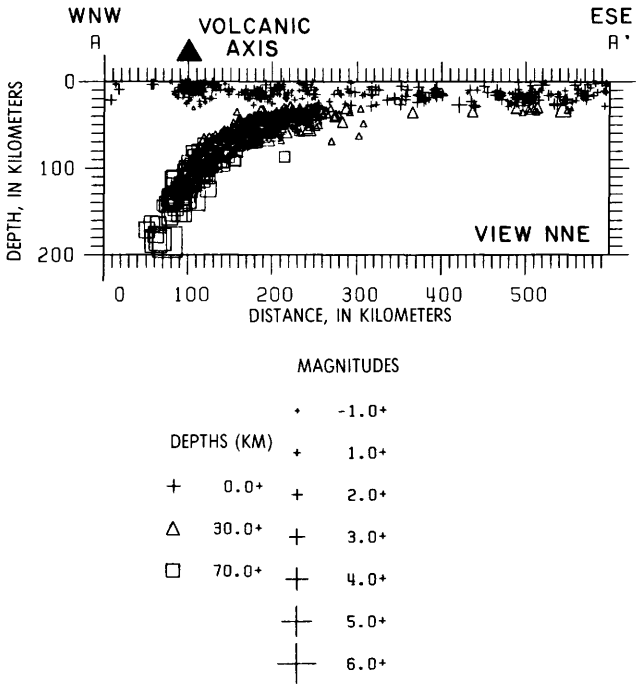

Figure 28. Cross section of earthquake hypocenters from Cook Inlet section of Aleutian Benioff zone projected onto vertical plane indicated by endpoints A - A' in figure 27.

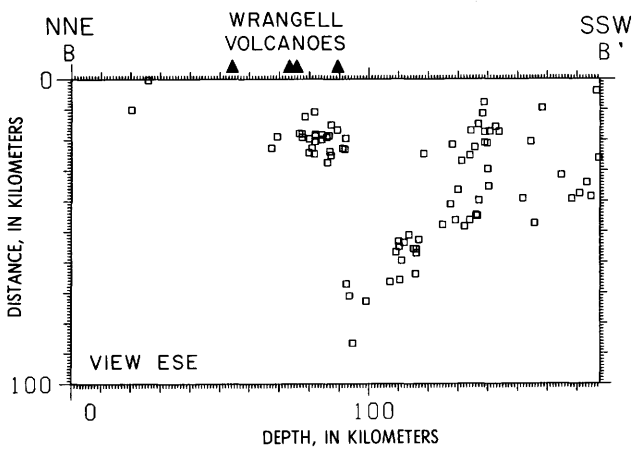

Figure 29. Cross section of selected data near Wrangell volcanoes (modified from Stephens, Fogelman and others, 1984). End points B - B' are indicated in figure 27. Section is approximately 200 km wide. Data covers time period 1972-1982.

nitudes of 4.7 m_b and were located within a few kilometers of each other. These two are the largest earthquakes known to have occurred along the northernmost section of the Fairweather fault since at least October 1974 when the regional network was extended into this area.

Table 2. *Earthquakes in southern Alaska with magnitude 4.5 mb or larger, or MM intensity IV or higher, 1982*

1982	(UT) Origin Time Hr	Mn	Sec	Lat N Deg	Min	Long W Deg	Min	Depth Km	Mag Mb	MS	MD	Int MM	Region
Jan 12	15	22	56.2	58°	57.8'	152°	11.2'	65.9	4.8	-	3.7	IV	S. Cook Inlet Benioff Zone
Feb 26	07	16	58.2	59°	59.2'	152°	57.4'	135.8	4.9	-	4.6	IV	S. Cook Inlet Benioff Zone
Feb 27	12	18	09.1	62°	14.8'	147°	45.7'	53.1	5.0	-	4.0	III	N. Cook Inlet Benioff Zone
Apr 16	11	31	48.8	61°	20.7'	149°	13.7'	31.7	-	-	2.9	IV	N. Prince William Sound
Apr 23	14	43	16.4	60°	12.2'	141°	02.5'	7.3	4.9	4.2	3.4	-	St. Elias Aftershock
May 02	15	35	58.6	60°	04.1'	141°	07.6'	11.6	5.0	5.1	3.8	-	St. Elias Aftershock
May 02	17	00	27.0	60°	03.3'	141°	09.1'	11.9	4.5	-	3.4	-	St. Elias Aftershock
May 02	17	13	37.7	60°	04.2'	141°	10.5'	11.4	4.5	4.4	3.3	-	St. Elias Aftershock
May 03	10	14	14.0	60°	01.6'	141°	06.3'	11.4	5.0	4.7	3.8	IV	St. Elias Aftershock
May 05	19	49	55.0	61°	11.9'	149°	32.2'	50.0	4.8	-	4.2	V	East of Anchorage
Jun 18	14	08	15.2	59°	26.9'	152°	30.0'	74.3	-	-	4.3	IV	S. Cook Inlet Benioff Zone
Jul 01	00	09	54.3	59°	26.2'	152°	52.3	95.9	4.5	-	3.9	III	S. Cook Inlet Benioff Zone
Jul 06	17	33	09.9	59°	05.1'	152°	26.9'	68.4	4.8	-	4.5	IV	S. Cook Inlet Benioff Zone
Jul 10	09	22	39.2	61°	11.5'	149°	39.0'	39.7	4.3	-	3.9	IV	East of Anchorage
Jul 14	12	15	46.8	60°	23.8'	153°	16.5'	185.6	5.0	-	5.4	IV	S. Cook Inlet Benioff Zone
Aug 07	08	37	24.8	60°	09.7'	139°	21.3'	0.5	4.7	-	4.1	III	North of Yakutat Bay
Aug 10	16	25	41.0	60°	07.3'	153°	03.8'	133.5	4.9	-	4.4	-	S. Cook Inlet Benioff Zone
Aug 25	15	05	18.6	60°	05.6'	139°	28.4'	12.4	4.7	-	4.2	-	North of Yakutat Bay
Oct 19	19	20	08.2	59°	18.0'	145°	03.6'	31.7	4.7	-	3.8	-	Prince William Sound
Nov 06	23	35	00.9	62°	57.4'	150°	17.9'	97.6	4.5	-	3.7	-	N. Cook Inlet Benioff Zone
Nov 10	17	23	52.6	60°	49.8'	146°	19.4'	26.7	4.8	-	3.2	-	N. Prince William Sound
Dec 05	12	09	52.7	60°	06.3'	152°	02.5'	62.0	4.9	-	3.9	-	S. Cook Inlet Benioff Zone

Hypocenters were determined using the USGS Regional Seismograph Network. Body-wave (Mb) and surface-wave (MS) Magnitudes and Modified Mercalli (MM) Intensities are taken from the preliminary determination of epicenters (PDE) of the U.S. Geological Survey. MD is the coda-duration magnitude determined from regional stations.

Northern and Central California Earthquakes, 1982

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The Seismographic Stations operated a network of 19 stations (shown as triangles in figs. 30 and 31) during 1982. The most significant change in the network occurred at Jamestown (JAS), where the Digital Recording System (DRS) for the JAS digital WWSSN station was upgraded by the USGS, Albuquerque Seismological Laboratory to allow remote recording, calibration, and control over a duplex 2400 baud telephone telemetry link. The upgraded instrumentation at JAS and the control and recording equipment at Berkeley were installed in February 1982.

During 1982, the occurrence of approximately 4,150 seismic events were cataloged on summary sheets and 1,138 teleseisms and 438 local earthquakes were analyzed. The Bulletin of the Seismographic Stations, Volume 52, Nos. 1 and 2 (McKenzie and others, 1983), contains location and magnitude information for 126 earthquakes ($3.0 \leq M_L \leq 5.4$) located in Northern and Central California and adjoining regions. The epicentral locations are plotted in figures 30 and 31 which cover the first and last 6 months of 1982, respectively. (The numbers correspond to a list in the Bulletin.)

As part of our on-going seismicity monitoring program, the cumulative number of earthquakes versus local Richter magnitude (M_L) was computed and plotted in figures 30 and 31. The data set consists of 2,006 earthquakes ($3.0 \leq M_L \leq 6.9$) listed in the Bulletin of the Seismographic Stations in a 280,000 km^2 region in Northern and Central California, during the two decade interval from 1962 through 1982. The region covers the part of California including coastal areas, north of the dashed line in figure 32. The earthquakes were grouped

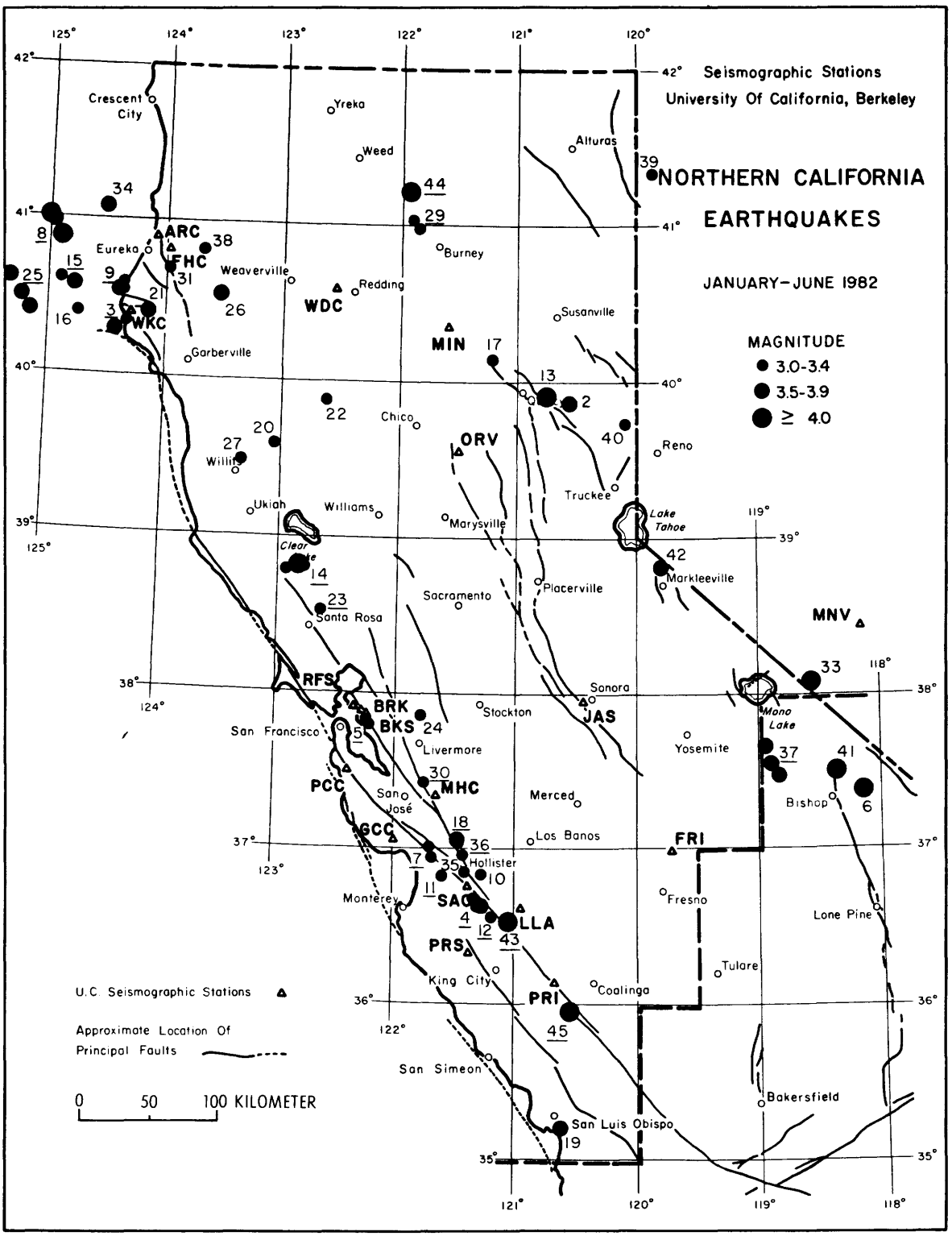

Figure 30. Northern and central California seismicity, January–June 1982.

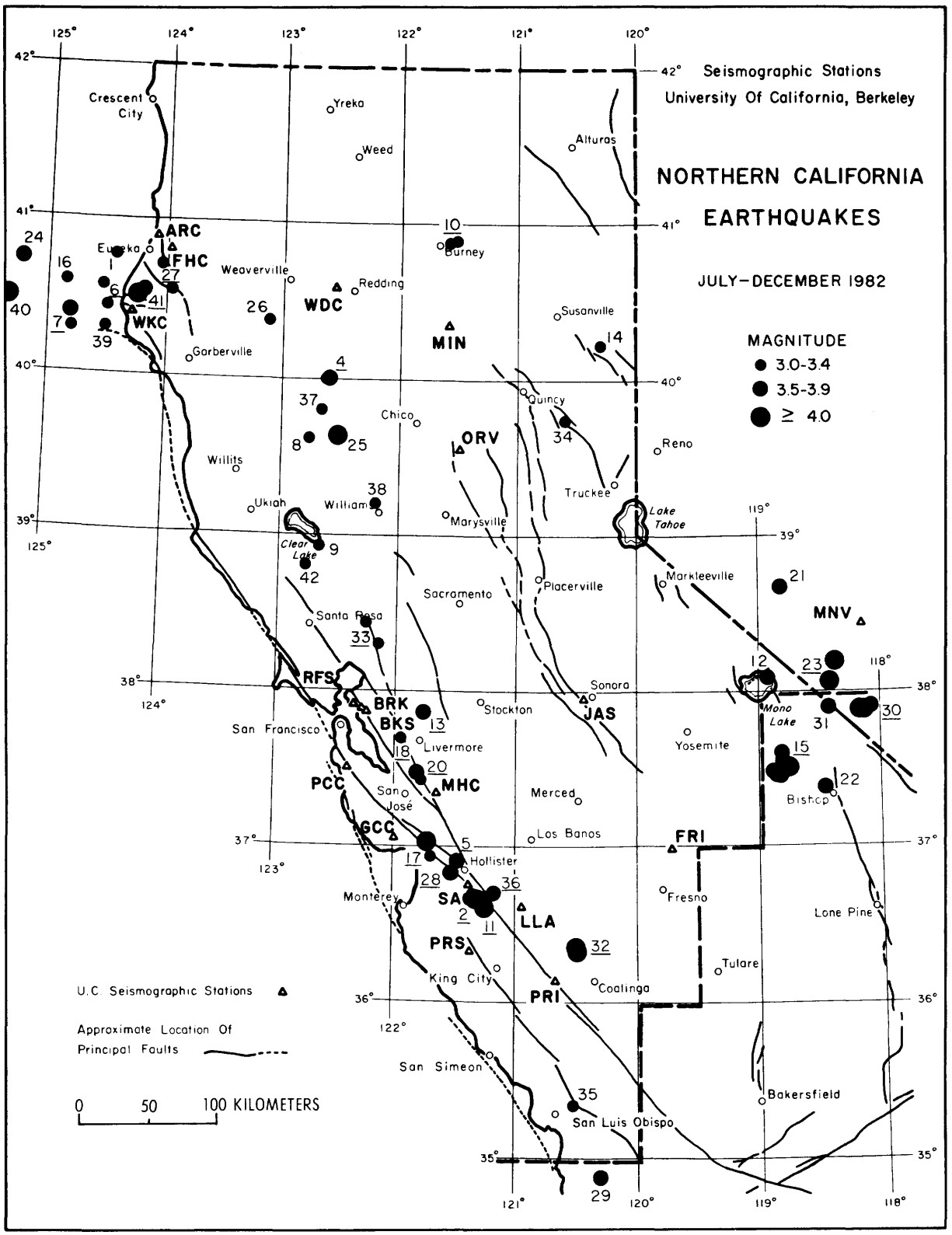

Figure 31. Northern and central California seismicity, July–December 1982.

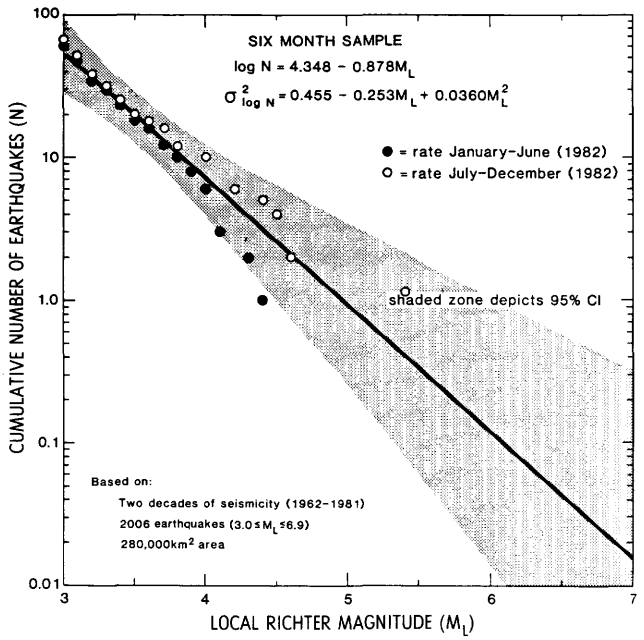

Figure 32. Recent rate of seismicity for Northern and Central California.

into 40 consecutive 6-month intervals for analysis. The average cumulative number of earthquakes N (total number with a magnitude $\geq M_L$) in a 6 month interval is given by:

$$\log N = 4.348 - 0.878\ M_L\ ,$$

and the corresponding variance is:

$$\sigma^2_{\log N} = 0.456 - 0.253\ M_L + 0.0360\ M_L^2.$$

The above equations are considered valid for $3.0 \leq M_L \leq 6.9$ and it is not advisable to extrapolate for $M_L \geq 7$.

The rate of seismicity, r (in earthquakes per year) its corresponding uncertainty, σ_r, and the approximate interoccurrence times for Northern and Central California as inferred from the above calculations are:

$M_L \geq$	r	σ_r	Interoccurrence Time
3.0	104.0	46.9	3.5 days
3.5	37.7	12.0	10 days
4.0	13.7	5.99	4 weeks
4.5	4.99	3.42	10 weeks
5.0	1.82	1.76	7 months
5.5	0.661	0.837	18 months
6.0	0.241	0.377	4 years
6.5	0.0876	0.164	11 years
7.0	0.0319	0.0694	31 years

It is of interest to determine whether or not the observed number of earthquakes which have occurred in a region in a given time interval has deviated significantly from the norm. The solid circles in figure 32 give the cumulative number of earthquakes (60 earthquakes, $3.0 \leq M_L \leq 4.4$) which occurred during the first half of 1982, and the open circles give the cumulative number of earthquakes (66 earthquakes, $3.0 \leq M_L \leq 5.4$) which occurred during the second half of 1982. Thus the rate of seismicity during the first half of 1982 is significantly lower than the average semiannual rate of seismicity over the past two decades. On the other hand, the rate of seismicity during the second half of 1982 is not significantly different.

During 1982, two earthquakes of Richter magnitude 5.0 or larger occurred in Northern and Central California. On February 6, an $M_L = 5.2$ earthquake occurred off the coast of Northern California (number 8 in figure 30) and was felt in Eureka (MM intensity IV) and Crescent City (MM intensity III). On October 25, an $M_L = 5.4$ earthquake occurred approximately 25 km north of Coalinga (number 32 in figure 31) and was felt in Coalinga (MM intensity IV). Slight damage was reported. This earthquake was felt from San Luis Obispo and Bakersfield in the south to San Francisco and Sacramento in the north and as far east as Bishop.

As an example of the capability of the telemetered 3-component JAS Digital Recording System, the intermediate-period seismograms for the $M_L = 5.4$ Coalinga earthquake are shown in figure 33. Of particular interest is the resolution (96 db) which is available with the JAS DRS. The peak signal amplitudes in figure 33 are 70 per cent of full-scale and the signal-to-noise ratio is greater than 65 db, which is desirable in source mechanism and wave propagation studies. The seismic moment of the $M_L = 5.4$ Coalinga earthquake, determined from the body waves recorded in figure 33, is $M_o = 1.1 \times 10^{24}$ dyne-cm.

Southern California Earthquakes

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Nineteen eighty-two was a relatively quiet year from the point of view on the Southern California Seismic Network. Over 6,000 earthquakes were located and cataloged. Figure 34 shows the distribution of these events on a map, with the major faults indicated.

Thirty-six events of M_L 4.0 or greater appear in the catalog. Seventeen of these are in the traditional coverage area of the network; the others occurred in active places on the border of the network like Mammoth Lakes, Baja California and Coalinga. The largest shock in the catalog is a M_L 5.6 Coalinga earthquake on October 25.

The most significant sequences within the coverage area were both under the China Lake Naval Weapons Center in Indian Wells Valley. A swarm in early March contained ten events with M_L greater than 4.0. The largest of the Indian Wells Valley swarms occurred in late

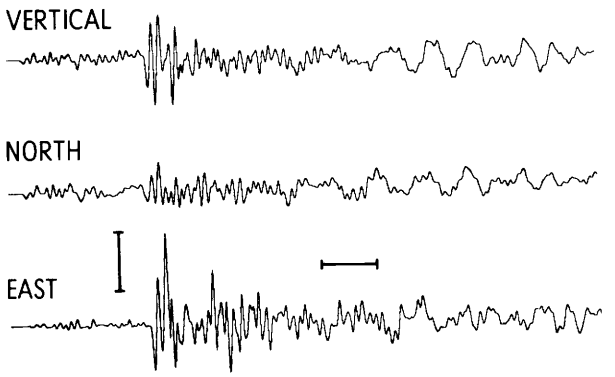

Figure 33. JAS intermediate-period seismograms for ML = 5.4 Coalinga earthquake of October 25, 1982. Scales: vertical = 0.1 cm/s and horizontal = 10 s.

September and early November. This sequence had 25 members larger than 3.0 and six larger than 4.0, the largest being 4.9.

Network operations continued under joint management of the Seismological Laboratory at C.I.T. and the U.S. Geological Survey using the CUSP (Caltech/USGS Seismic Processor) computer system.

Seismicity and Volcanic Activity in Hawaii during 1982

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The emphasis in both station coverage and detailed data analysis is in the highly active south half of the island of Hawaii. Hundreds of earthquakes too small to locate are counted daily, and the set of located earthquakes in the Kilauea region is nearly complete above magnitude about 2.0. Many smaller events are located also. Substantial effort is made to locate earthquakes elsewhere on the island and within about 150 km of the island (fig. 35). Such coverage cannot be as complete as on the south flank, but nearly all events above magnitude 3.0 to 3.5 are located.

Nineteen eighty-two was an active year for Kilauea Volcano. The major events were a summit eruption on April 30-May 1, a southwest rift intrusion on June 22-23, another summit eruption on September 25-26, and an upper east rift intrusion on December 9.

The April 30 eruption began at 11:37 (Hawaiian Standard Time) following nearly 3 hours of rapid summit inflation, tremor, and an intense seismic swarm. Lava was erupted from an east-northeast-trending fissure about 1 km long extending across the floor of Kilauea Caldera from the northeast rim of Halemaumau Crater. The lava fountains were about 5 to 10 meters high, with bursts up to 25 to 50 meters. About 0.5×10^6 m^3 of lava flows covering 0.3×10^6 m^2 were formed before the eruption ended at about 06:30 May 1.

On June 22-24 a major intrusion of magma moved into the southwest rift of Kilauea, continuing the series of intrusions into the southwest rift that began in January 1981. Summit deflation, an earthquake swarm, and tremor accompanied this injection of at least 20×10^6 m^3 of magma moved into the middle southwest rift between Puu Koae and Kamakaia Hills.

On September 25-26 another Kilauea summit eruption issued from an east-northeast-trending group of fissures about 1 km long in the south caldera area 1.2 km south-southeast of Halemaumau Crater. This eruption was preceded by nearly 2 hours of rapid summit inflation, tremor, and an earthquake swarm. The outbreak began at 18:45 on September 25 and lasted until about 08:30 on September 26. Lava fountains reached a general height of 20 to 40 meters with bursts up to 50 to 70 meters. About 3×10^6 m^3 of lava was erupted, and covered an area of 0.7×10^6 m^2. Some 2×10^6 m^3 of ponded lava drained back down the vents on September 26-27, lowering the lava surface by 2 to 4 meters. One tongue of lava extended northeast across the Crater Rim Road, and another flowed over the low south rim of the caldera and moved about 1.5 km to the south-southeast.

Following the September eruption, most of the earthquake activity shifted from the southwest rift to the east rift of Kilauea. From 17:30 until 20:00 on December 9, an intense earthquake swarm, but no tremor, occurred between Lua Manu and Kokoolau Craters on the upper east rift zone. This was accompanied by 3 microradians of summit deflation, indicating an intrusion of at least 1×10^6 m^3.

Mauna Loa Volcano continued to inflate during 1982 at about the same rate that it has since 1977. The increase in volume of the summit region is about 4×10^6 m^3/year, and the center of inflation remains southeast of the rim of the caldera. Shallow earthquakes beneath the summit area of Mauna Loa continued to occur at a gradually increasing rate that began in 1980. This rate of earthquake occurrence is higher than during 1971 to 1973, but much lower than during late 1974 and early 1975 preceding the July 1975 eruption. There have been no eruptions or apparent dike intrusions of Mauna Loa since the 1975 activity. The magma supply rate into Mauna Loa since 1975 appears to be only about 5 to 10% of the magma supply rate into Kilauea during this same period.

Twenty-one earthquakes of magnitude 4.0 or greater occurred beneath or near Hawaii in 1982, including a 5.6 M_L and a 5.4 M_L quake at 10- to 12-km depths beneath the south flank of Mauna Loa, on January 21. First motions of these two large quakes and the distribution of their aftershocks indicate failure on a nearly horizontal fault, with the upper plate moving away from the southwest rift of Mauna Loa in a seaward direction. It thus appears that the flanks of Mauna Loa moved away from the growing rift zones in the direction of least resistance, probably as a result of push-apart stresses in the rift zones combined with gravitational stresses in the down-slope directions of the volcanic pile.

Kansas-Nebraska Seismicity, 1982

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The Kansas seismic network consisted of nine stations during most of 1982. In December of 1982, an additional six stations were added in eastern Nebraska.

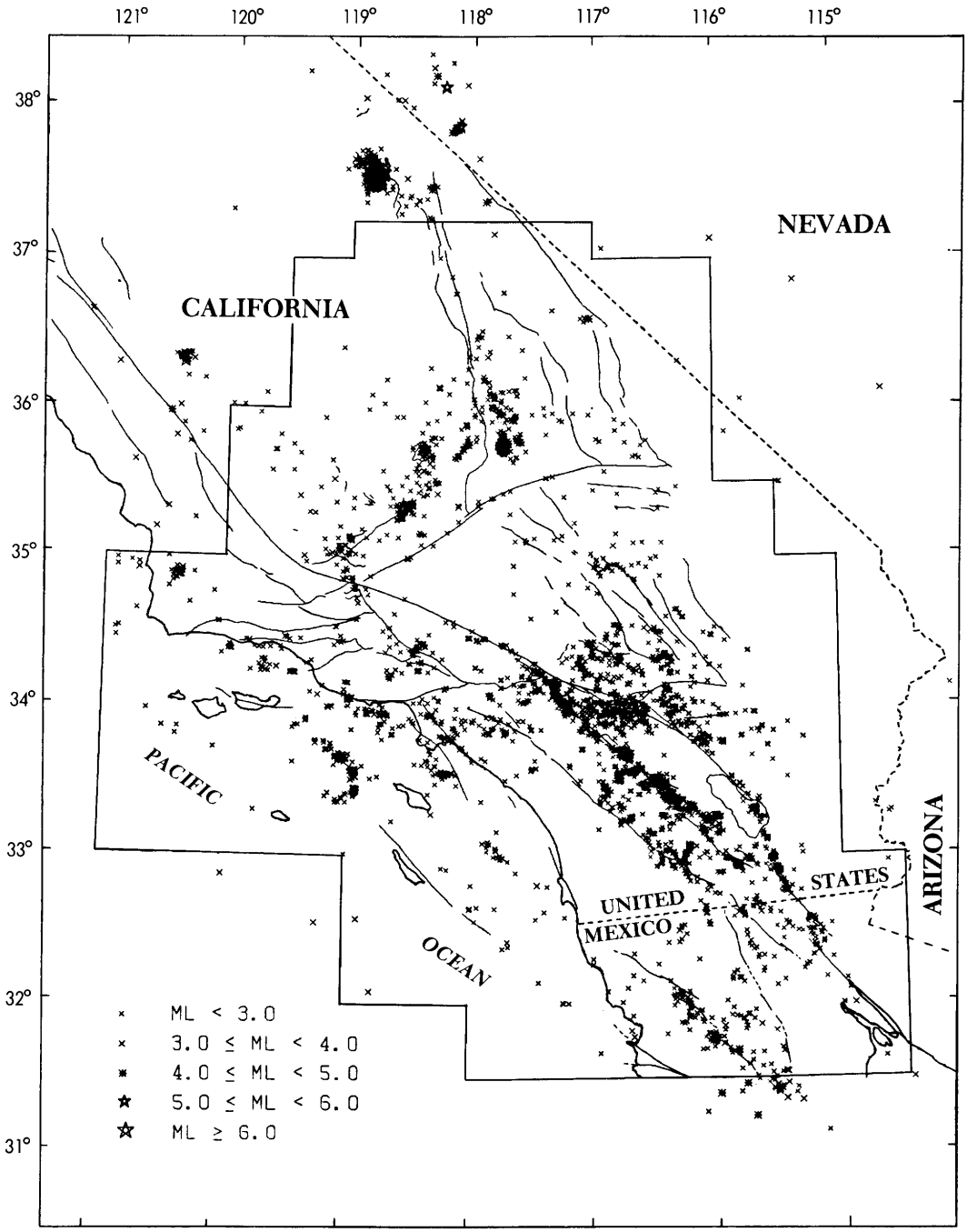

Figure 34. Map of earthquakes located and cataloged by the Southern California network during 1982.

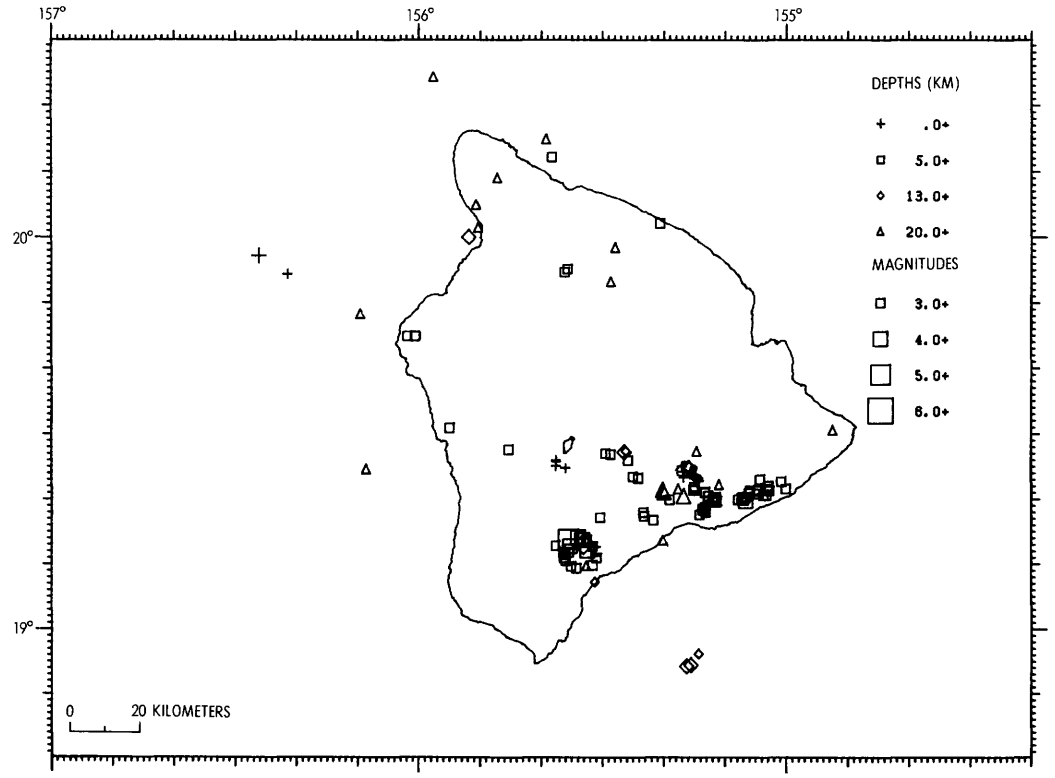

Figure 35. Map of earthquakes of ML $\geq$ 3.0 in the vicinity of the Island of Hawaii during 1982.

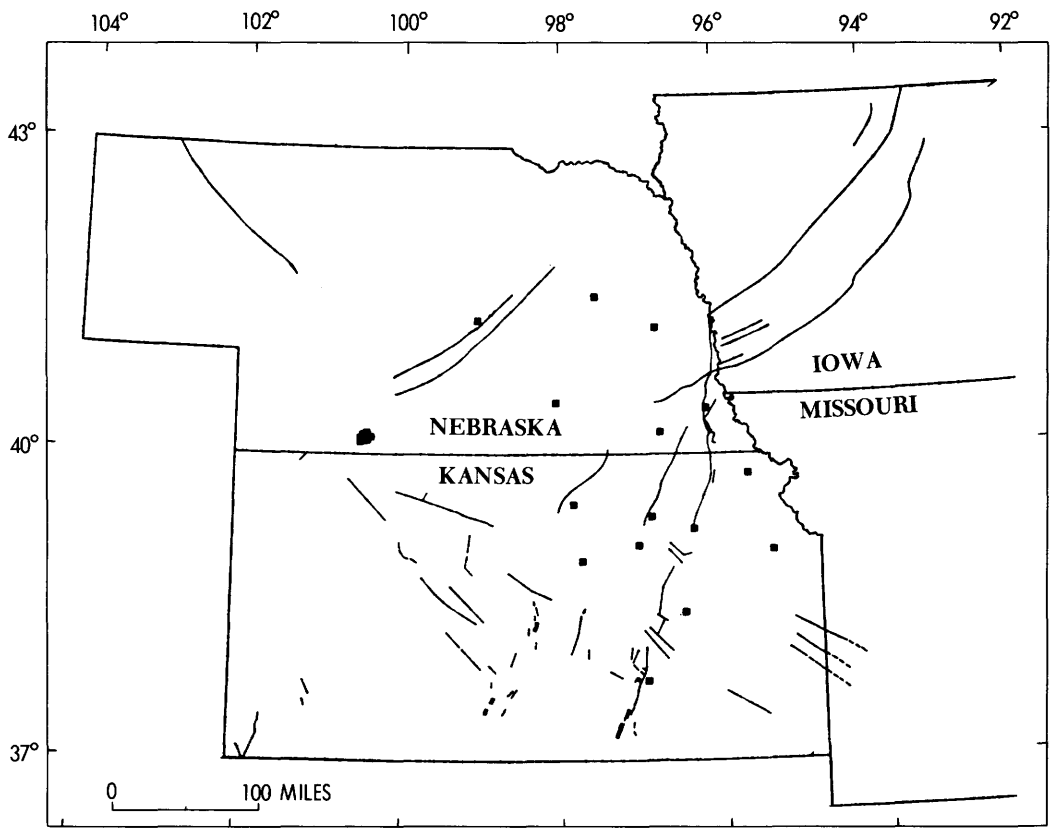

Figure 36. Seismograph stations in Kansas and Nebraska operating in December 1982. Sleepy Hollow stations are shown by the cluster of squares in southwestern Nebraska. Known faults are shown by thin lines (dashed where inferred) and stations are depicted by squares.

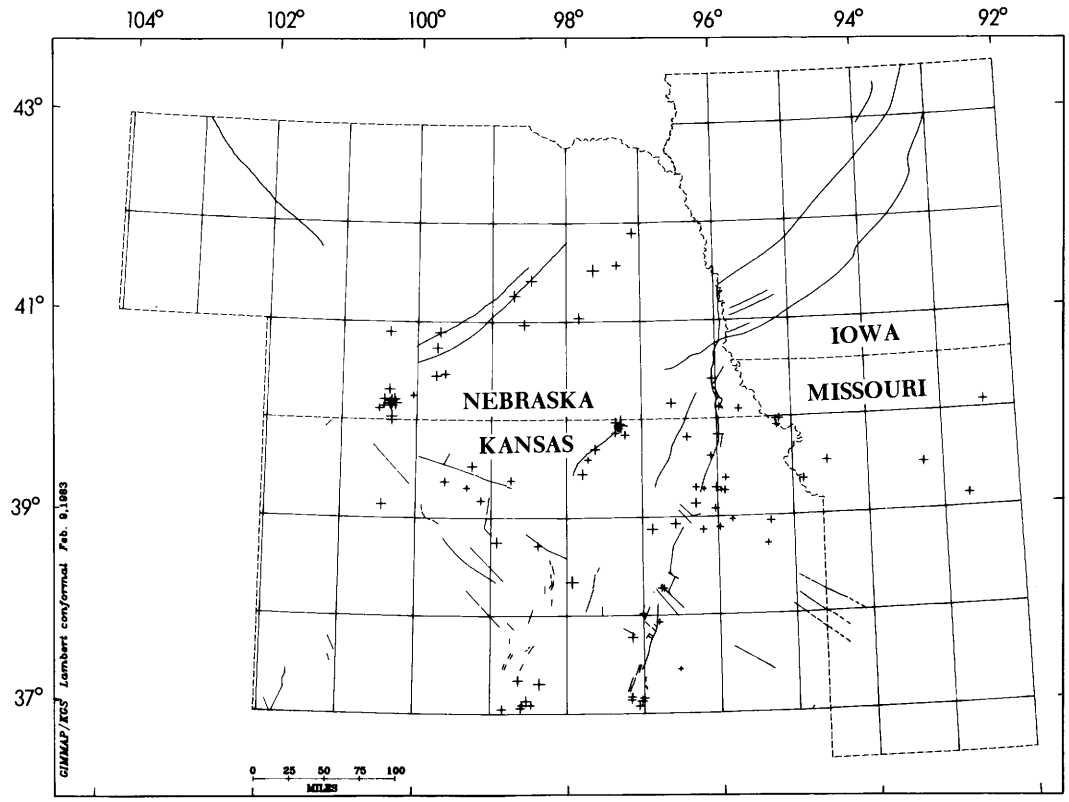

Figure 37. Microearthquakes, located by Kansas seismograph network between August 1977 and February 1983, shown by size coded plus signs. The largest event had a magnitude of 3.3Mn. The smallest events had magnitudes of about 1.0 (local duration scale).

A dense network of eight stations was also operated in the Sleepy Hollow, Nebraska, oil field during the last 9 months of 1982 near 40.2° N., 100.4° W. Figure 36 shows network station locations on 31 December 1982.

Figure 37 shows cumulative microearthquake epicenters recorded since August 1977. There are essentially four microearthquake trends that can be identified from this figure. One trend is associated with the Humboldt Fault Zone running south-southwesterly from near 40° N., 96° W. to near 37° N., 97° W. A second trend is nearly parallel to the first and is associated with the northwest flank of the Midcontinent Geophysical Anomaly (MGA), running south-southwesterly from near 40° N., 97.3° W. to near 37° N., 98.5° W. A third trend is generally associated with the Central Kansas uplift, running from near 38° N., 98° W. northwesterly to the Sleepy Hollow, Nebraska, area near 40.2° N., 100.4° W. The fourth and final trend presently identified runs northeastward across Nebraska from Sleepy Hollow to near 42° N., 97° W.

Table 3 shows locations and local duration magnitudes for events recorded by the Kansas network during 1982. The only event that was known to be felt occurred near 38.8° N., 98.9° W. on 3 September 1982, with maximum MM Intensity IV. Locations of 14 events smaller than local magnitude 2.0 within the Sleepy Hollow network are listed in table 4, but not shown in figure 37.

Central Mississippi Valley Earthquakes, 1982

By W. Stauder, R. Herrmann, J. Chulick, M. Meremonte, R. Dwyer, J. Mascarenas, V. Masih, L. Himes, P. Leu, T. Shin, E. Haug, S. Morrissey, L. Hausmann, and M. Whittington
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During 1982, 222 earthquakes were located and 178 other nonlocatable earthquakes were detected by a 33-station regional telemetered microearthquake network operated by Saint Louis University under contract for the USGS and U.S. Nuclear Regulatory Commission. Figure 38 shows 193 earthquakes located within a 4° x 5° region centered on 36.5° W. and 89.5° W. Seismograph stations are denoted by the triangles and are labeled by the station code. The magnitudes are indicated by the size of the open symbols. Figure 39 shows the locations and magnitudes of 162 earthquakes located within a 1.5° x 1.5° region centered at 36.25° N. and 89.75° W. Figures 40 and 41 are similar to figures 38 and 39, but the epicenter symbols are scaled to focal depth.

Explanation of tables 3 and 4

The microearthquakes are listed in chronological order under the following headings:

DATE: year, month, day

ORIGIN: hour, minute, seconds, hundredths of seconds

LAT N: degrees, minutes, hundredths of minutes north

LONG W: degrees, minutes, hundredths of minutes west

DEPTH: calculated in kilometers or fixed at 5.00 km

MAG: duration magnitude calculated according to equation derived at Oklahoma Geological Observatory

NO: number of P- and S-arrivals used in hypocenter solution

GAP: largest azimuthal separation between stations measured from the epicenter

DMIN: epicentral distance in kilometers to nearest station

RMS: root-mean-square error of the time residuals

[RMS = $(\Sigma_i R_i^2/NO)^{1/2}$] where R_i is the observed seismic-wave travel time less the computed time at the i^{th} station

ERH: standard error of the epicenter in kilometers

[ERH = $(SDX^2 + SDY^2)^{1/2}$] where SDX and SDY are the standard errors in latitude and longitude, respectively, of the epicenter

ERZ: standard error of depth in kilometers (asterisks are used if greater than 999 km). This is not a good estimate of depth uncertainty in a sparse network.

Q: quality of the event. In a dense network, values are A, B, C, D. Only C and D quality solutions are obtained because of the sparseness of the network. Q is based upon GAP, ERH, ERZ, DMIN, RMS, and NO.

M: crustal model number used in each individual solution. All of the locations use the same model discussed elsewhere in this report.

Table 3. *Kansas and Nebraska earthquakes, 1982*

Date	Origin	Lat. N.	Long. W.	Depth	Mag	no	gap	dmin	rms	erh	erz	qm
820130	1008 59.00	37°55.75'	96°47.80'	5.00	1.4	10	149	17.2	0.31	3.4	11.6	c1
820224	2035 25.48	37°46.53'	97° 8.73'	6.92	2.2	20	184	30.9	0.46	2.7	2.5	d1
820311	1819 57.05	39°15.41'	99°21.39'	8.84	1.9	9	218	91.0	0.70	10.9	4.1	d1
820315	0658 25.44	36°55.18'	98°10.33'	5.00	1.9	9	118	90.3	1.06	8.4	12.7	d1
820327	1957 23.61	38°53.32'	95°58.64'	5.00	1.6	8	136	45.8	0.33	1.9	34.3	c1
820328	0809 37.07	38°57.67'	95°52.44'	5.00	1.2	8	254	43.8	0.46	4.9	46.0	d1
820406	0012 58.55	39°19.26'	97°42.88'	5.00	1.4	5	194	20.8	1.20	23.9	133.5	d1
820413	0706 04.49	39°32.31'	94°32.62'	5.00	2.0	9	297	79.0	0.23	2.4	1.8	c1
820424	1635 37.41	39°18.72'	96°10.62'	7.59	1.0	6	127	5.8	0.05	0.6	0.7	b1
820505	1607 12.88	39°49.69'	92°25.79'	5.00	2.0	0	269	262.6	1.13	7.1	34.5	d1
820603	1420 50.20	40°10.91'	96°35.12'	4.68	2.2	20	118	24.2	0.82	3.1	6.2	d1
820607	1726 26.10	37°55.74'	96°58.43'	5.00	1.5	6	226	23.3	0.77	12.9	37.4	d1
820721	2141 35.77	38° 5.93'	96° 9.00'	2.28	2.1	23	117	41.3	0.33	1.0	1.5	c1
820722	0330 56.27	37° 9.29'	98°32.04'	5.65	2.3	9	155	74.5	0.80	6.0	9.7	d1
820827	1419 25.39	40° 5.67'	95°57.96'	5.00	1.6	10	269	51.6	0.19	1.6	3.3	c1
820903	1055 20.54	38°47.43'	98°53.55'	10.86	2.5	12	197	113.3	0.21	2.0	1.9	c1
820906	1445 59.10	39°20.77'	96°18.04'	4.27	1.6	6	140	12.7	0.22	2.8	15.3	c1
821026	0044 07.77	39°31.79'	96°32.23'	9.10	1.8	6	163	41.5	0.18	0.1	0.5	c1
821223	0222 00.79	40°49.06'	99°32.98'	5.00	2.5	12	178	74.9	0.33	6.0	5.7	d1

Table 4. *Earthquakes located by the Sleepy Hollow, Nebraska, seismic network, April 1, 1982 to December 31, 1982*

Map No.	Date	hrmn	Lat N.	Long W.	Depth	Mag	rms	erh	erz
1	820401	2234	40°09.45'	100°23.16'	2.6	1.7	0.08	0.5	0.8
2	820403	1931	40°10.97'	100°21.20'	2.0	1.3	0.07	0.3	0.7
3	820408	1500	40°10.20'	100°21.31'	3.2	0.4	0.05	0.6	1.7
4	820411	2105	40°09.37'	100°22.84'	3.8	0.4	0.06	0.3	0.4
5	820414	0211	40°10.01'	100°22.51'	2.5	-0.2	0.10	0.5	0.6
6	820415	1104	40°11.23'	100°21.34'	2.2	0.3	0.04	0.4	0.7
7	820421	1845	40°09.29'	100°24.05'	0.5	0.1	0.06	0.3	0.3
8	820509	1026	40°10.01'	100°22.21'	3.2	0.7	0.13	0.7	1.2
9	820915	0943	40°10.55'	100°22.15'	1.8	0.2	0.10	0.4	0.2
10	820915	1220	40°10.48'	100°22.23'	2.5	-0.1	0.08	0.1	0.2
11	820915	1452	40°10.56'	100°22.00'	3.8	0.7	0.11	0.1	0.5
12	820927	0651	40°10.34'	100°20.62'	2.2	0.5	0.10	0.0	0.3
13	821016	1119	40°11.06'	100°21.07'	2.0	-0.5	0.05	0.2	1.6
14	821105	1344	40°10.57'	100°22.75'	2.2	0.3	0.10	0.3	0.7

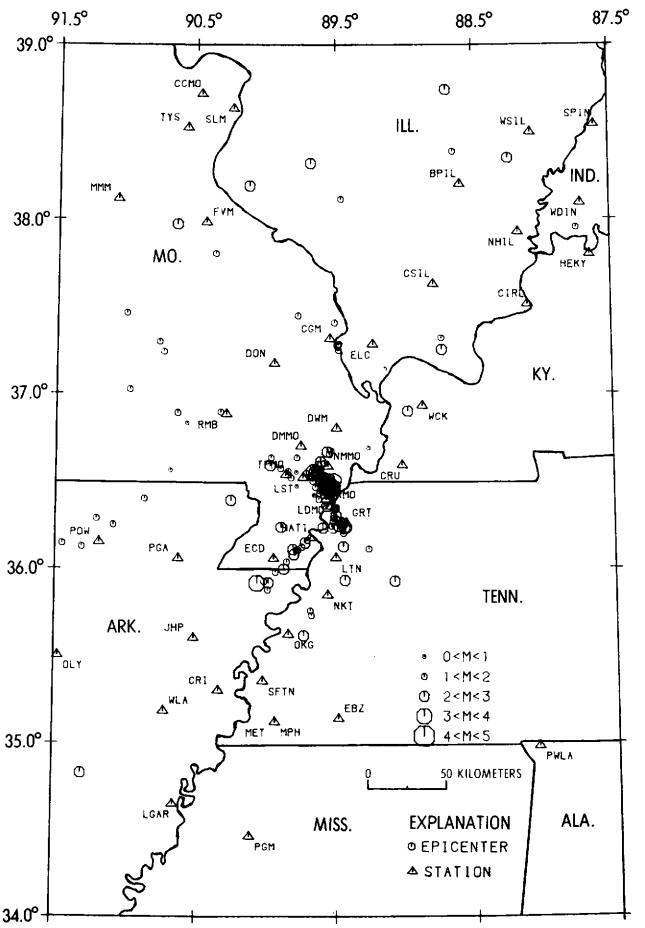

Figure 38. Central Mississippi Valley earthquakes during 1982 within a 4° x 5° region centered at 36.5° N. and 89.5° W.

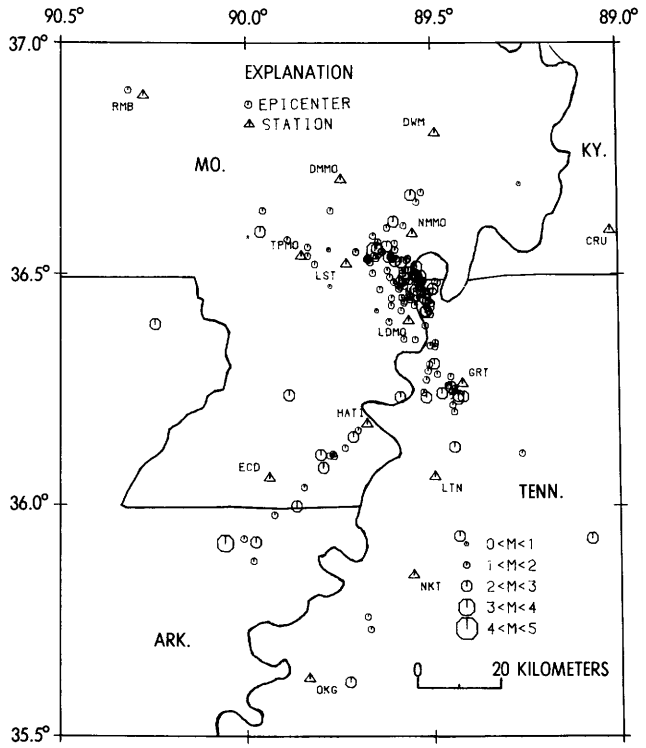

Figure 39. Central Mississippi Valley earthquakes during 1982 within a 1.5° x 1.5° region centered at 36.25° N. and 89.75° W.

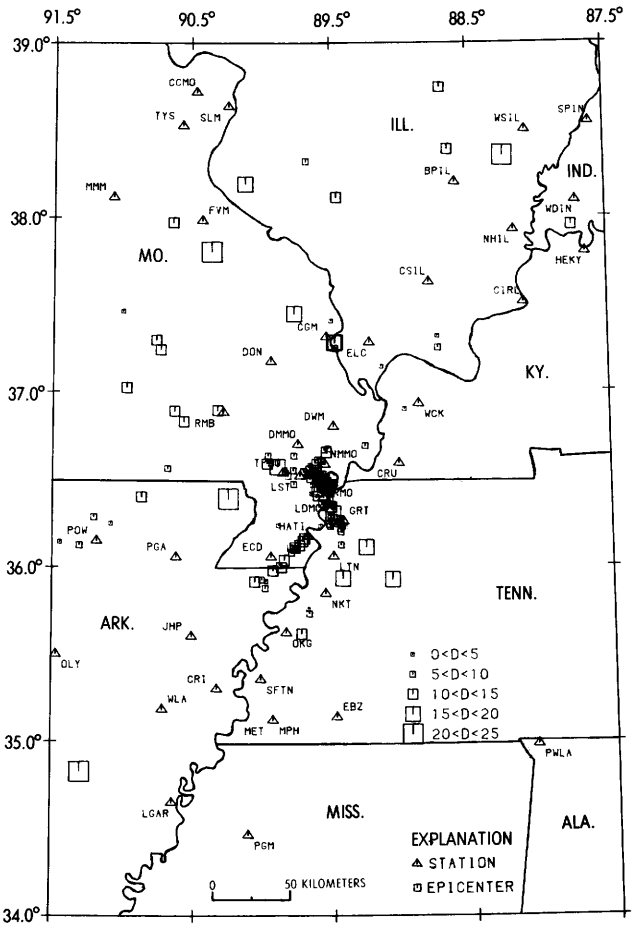

Figure 40. Central Mississippi Valley earthquakes during 1982 within a 4° x 5° region centered at 36.5° N. and 89.5° W. (epicenter symbols are scaled according to focal depth in kilometers).

Ninety-two teleseisms were detected by the PDP 11/34 microcomputer in 1982. Assuming a plane wavefront propagating across the network and using the travel time curves to determine the back azimuth and slowness, assuming a focal depth of 15 km and using spherical geometry, epicentral coordinates were determined. Arrival time information for teleseismic P phases has been published in the quarterly earthquake bulletins.

The significant earthquakes occurring in 1982 include the following:

1. Beginning on January 18, 1982 an earthquake swarm occurred about 60 km north of Little Rock, Arkansas. These events continued through 1982 and into 1983. The largest took place on January 21, 1982, 0033 UTC, 35.18° N., 92.25° W., m_{b3Hz}= 4.2 (FVM). For more information refer to Johnston and Metzger (1982) or Johnston (1982).
2. February 2, 1982, 0926 UTC, 35.91° N., 90.05° W.; felt in Blytheville and Gosnell, Arkansas as reported by Tennessee Earthquake Information Center (TEIC). m_{b3Hz}= 3.3 (FVM)
3. February 11, 1982, 0254 UTC, 36.61° N., 89.60° W.; felt near Ristine, Missouri. Report received from TEIC. m_{b3Hz}= 3.0 (FVM).
4. April 17, 1982, 0122 UTC, 35.92° N., 89.07° W.; felt in a 25 mile radius in Gibson County, Tennessee, near Dyer with strong shaking and a roaring noise. Report received from TEIC. m_{b3Hz}= 2.8 (FVM).
5. July 13, 1982, 0430 UTC, 36.59° N., 89.86° W.; felt (III) at Blytheville, Arkansas, and Holland, Missouri. Report from PDE (Preliminary Determination of Epicenters) No. 28-82. m_{b3Hz}= 2.6 (FVM), m_{bLg}= 2.6(TEIC).
6. August 11, 1982, 1032 UTC, 37.25° N., 88.73° W.; felt (V) in Metropolis, Illinois, and surrounding Massac County. There were reports of a loud noise, buildings shaking, and people being awakened. Two separate jolts were reported at Metropolis Hospital. The reports were received from various area news media. m_{bLg}= 3.1(FVM), m_{bLg}= 2.6 (SB, KY), m_{bLg}= 2.7 (L6, KY).
7. September 29, 1982, 0206 UTC, 36.26° N. 89.45° W.: felt in Ridgely, Tennessee. The Ridgely Police Department reported rumbling noises and houses shaking. m_{b3Hz}= 3.0(FVM), m_{bLg} = 2.1 (L6,KY), m_{bLg} = 2.1(SB,KY).

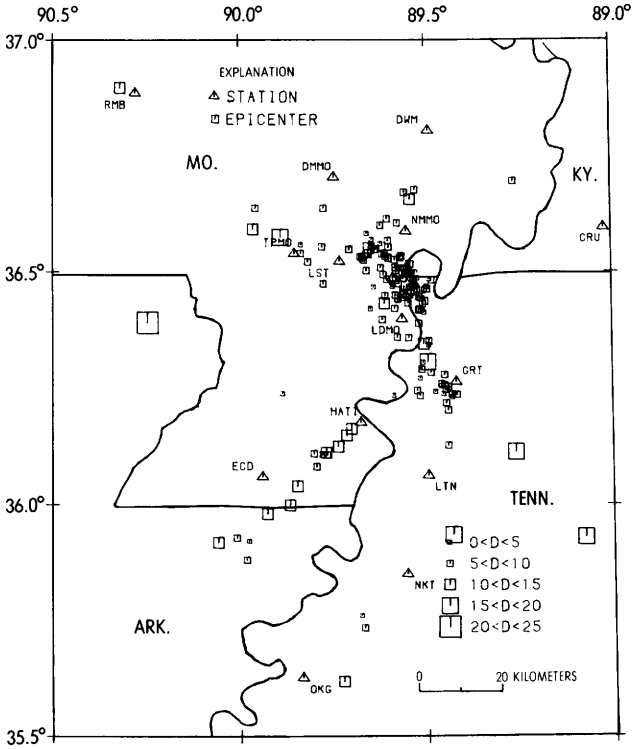

Figure 41. Central Mississippi Valley earthquakes during 1982 within a 1.5° x 1.5° region centered at 36.25° N. and 89.75° W. (epicenter symbols are scaled according to focal depth in kilometers).

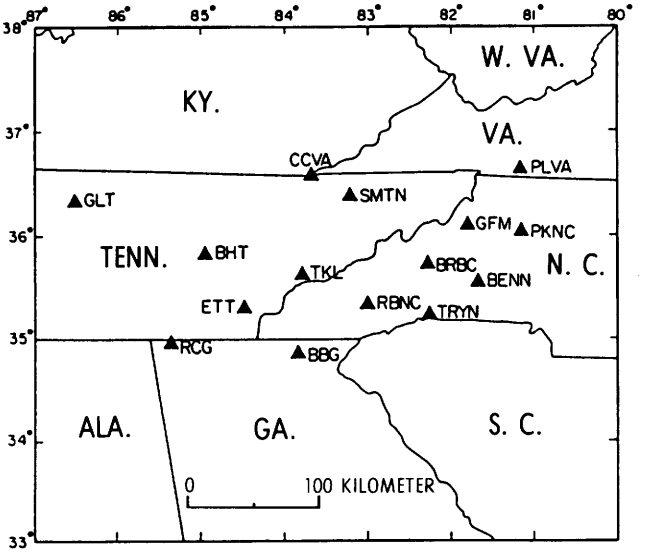

Figure 43. Southern Appalachian Regional Seismic Network (SARSN), 1982.

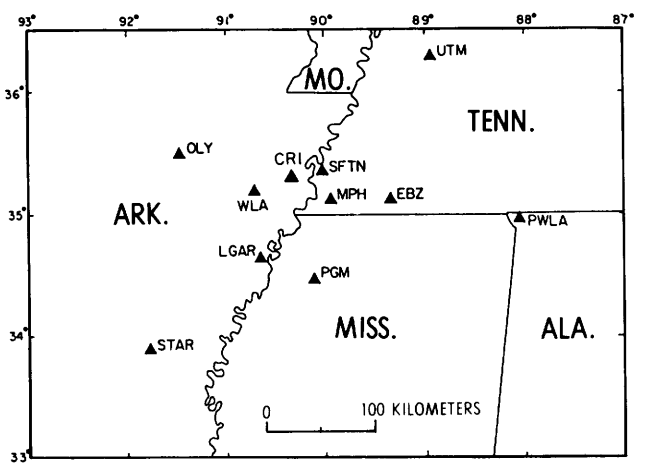

Figure 42. Memphis Area Regional Seismic Network (MARSN), 1982.

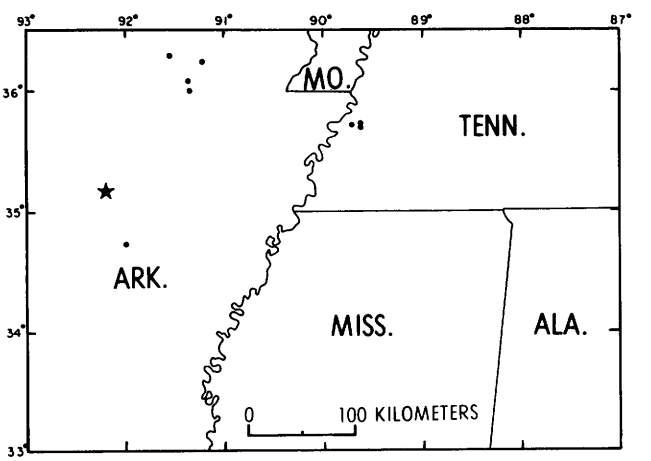

Figure 44. Central United States earthquakes, 1982 (hypocenters listed in table 5). The star denotes the location of the central Arkansas earthquake swarm (hypocenters listed in table 7).

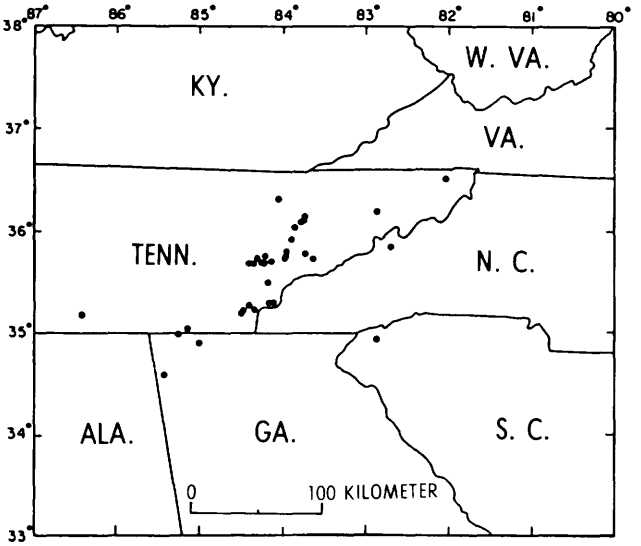

Figure 45. Southern Appalachians earthquakes, 1982 (hypocenters listed in table 6).

Earthquakes in the Southern Mississippi Valley and the Southern Appalachians, 1982

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Instrumentation

The Tennessee Earthquake Information Center (TEIC) operates two seismic networks: Memphis Area Regional Seismic Network (MARSN) and the Southern Appalachian Regional Seismic Network (SARSN). MARSN consists of nine stations, located in the states of Tennessee, Arkansas, Alabama, and Mississippi (fig. 42). SARSN is planned to be a 16 station network; at the end of 1982, 14 stations were operational, located in the states of Tennessee, North Carolina, Georgia, and Virginia (fig. 43).

MARSN is designed to monitor seismic activity in the southern portion of the New Madrid seismic zone and the lower Mississippi Embayment. Instrumentation consists of four Geotech S-13 seismometers (OLY, PWLA, EBZ, STAR) and three Kinemetrics Ranger seismometers (WLA, LGAR, PGM); all are vertical short period (1.0 s) seismometers. SFTN is a three-component Mark Products L-15, 8 Hz borehole seismometer located at the 486 foot level of an abandoned water test well. MPH, located at TEIC, is a three-component Sprengnether long period seismograph. CRI is a test site to compare surface-vs-downhole recordings. The downhole component is located at the base of a 100 foot well; the surface component is buried adjacent to the well. Both are vertical short period HS-10 seismometers. Two cooperative seismograph stations sponsored by TEIC are located and recorded at University of Tennessee in Martin and at Volunteer State Community College in Gallatin, Tennessee.

Table 5. *Hypocentral locations for Central United States, 1982*

DATE	ORIGIN TIME	MAG (DUR)	LAT	LONG	DEPTH
03-09-82	11:09:52.3	1.3	35.702	89.620	5.0R
05-01-82	13:05:26.7	2.8(II)	35.725	89.702	5.0R
05-29-82	01:15:44.6	1.7	35.997	91.358	5.0R
08-26-82	13:01:18.8	1.3	35.729	89.627	1.0
09-10-82	10:37:12.6	1.5	36.243	91.215	5.5
10-17-82	03:55:49.0	1.6	36.090	91.354	5.0R
12-10-82	09:23:49.6	1.8	34.732	91.996	5.0R
12-31-82	08:17:37.2	1.7	36.301	91.536	5.0R

Table 6. *Hypocentral locations for Southern Appalachia, 1982*

DATE	ORIGIN TIME	MAG (DUR)	LAT	LONG	DEPTH
01-02-82	02:00:26.2	3.1(IV)	35.179	86.429	12.9
01-30-82	12:39:12.9	2.8	35.796	83.964	20.4
01-31-82	10:13:42.5	2.2	35.716	83.664	13.8
02-23-82	09:19:08.8	2.3	34.575	85.445	6.5
02-24-82	12:10:06.3	1.5	35.733	84.304	20.5
04-13-82	13:04:13.3	3.0	36.512	82.041	3.4
05-05-82	15:28:16.6	1.9	35.675	84.415	13.0
05-12-82	01:21:52.2	2.6	34.896	85.020	10.0
05-15-82	03:54:47.4	1.0	35.679	84.345	21.2
05-20-82	07:12:07.7	1.3	35.039	85.148	10.7
05-26-82	07:42:43.0	2.0	34.990	85.265	18.5
05-30-82	07:11:59.1	1.4	35.702	84.135	11.6
06-12-82	12:20:29.5	1.1	36.093	83.777	16.3
06-17-82	21:09:38.2	1.7	35.208	84.498	6.4
07-08-82	05:18:50.9	0.7	35.484	84.178	15.2
07-10-82	22:42:26.8	1.1	35.841	82.708	6.4
07-19-82	04:34:42.6	0.9	35.738	83.978	12.6
08-25-82	07:44:47.8	1.5	35.922	83.906	14.3
09-02-82	21:52:45.5	3.0	34.928	82.893	9.2
09-05-82	10:11:09.4	3.2(II-III)	35.192	84.506	12.6
09-07-82	07:56:45.1	0.3	35.292	84.116	21.7
09-20-82	17:01:48.6	1.1	36.036	83.868	10.2
09-21-82	01:07:18.3	1.4	36.113	83.750	15.7
09-24-82	21:57:42.5	3.4(IV)	35.680	84.238	13.1
09-24-82	22:19:16.9	3.5(V)	35.684	84.251	8.1
10-22-82	02:34:32.5	1.6	36.324	84.067	20.2
11-02-82	08:44:45.6	1.2	35.766	83.970	13.6
11-08-82	09:56:10.6	0.5	35.222	84.345	18.3
11-14-82	10:31:59.1	2.7	36.206	82.876	10.3
12-01-82	03:06:23.8	1.0	35.767	83.741	1.0
12-01-82	13:39:44.6	0.4	35.255	84.428	13.1
12-06-82	10:52:35.1	1.7	36.136	83.747	9.0
12-14-82	06:35:10.2	2.4	35.298	84.166	12.2
12-15-82	02:27:59.3	2.1	35.749	84.220	13.1

SARSN is designed to monitor the seismic activity of the Southern Appalachians. All SARSN stations have Geotech S-13 vertical short period seismometers. Data for both networks are telemetered via radio to central receiving sites, then brought to TEIC over leased telephone lines. All short period data are recorded in analog form on 16mm Develocorder film or pen and ink paper records. Digital recording will commence in 1984-1985.

Seismic Activity

All events recorded by a sufficient number of MARSN and SARSN stations were located using HYPO 71 (Lee and Lahr, 1975) during 1982. The MARS network located eight events in 1982. These events are presented in table 5 and figure 44. Not included in this total are 70 New Madrid events for which better coverage was available from St. Louis University. Figure 45 and Table 6

Table 7. *Arkansas swarm hypocenters for events MD≥2.6*

DATE	ORIGIN TIME	MAG (DUR)	LAT	LONG	DEPTH
01-18-82	01:23:07.3	3.0	35.1918	92.2475	1.7
01-18-82	02:32:12.6	3.2	35.1882	92.2550	1.8
01-18-82	09:32:59.3	2.6	35.1938	92.2597	1.5
01-19-82	04:39:49.5	3.5	35.1928	92.2535	0.7
01-20-82	14:01:30.7	3.4	35.1997	92.2105	0.4
01-21-82	00:33:54.8	4.5**	35.1755	92.2110	2.8
01-21-82	00:37:35.6	3.0	35.1618	92.2407	0.7
01-21-82	01:13:38.7	3.1	35.1405	92.2337	8.8
01-21-82	02:56:39.2	2.8	35.1537	92.2072	0.8
01-21-82	03:15:28.9	2.6	35.1633	92.2105	2.6
01-21-82	03:27:39.4	2.7	35.1782	92.2247	6.7
01-21-82	11:53:53.6	2.8	35.1540	92.2105	5.9
01-21-82	12:03:01.8	2.9	35.2042	92.2147	0.2
01-21-82	13:00:11.7	2.8	35.2052	92.2247	1.0
01-21-82	14:09:12.7	2.7	35.1905	92.2138	0.3
01-21-82	15:45:38.6	3.6	35.1933	92.2023	3.8
01-21-82	15:48:26.8	2.7	35.2097	92.2157	0.2
01-22-82	08:47:54.8	2.7	35.2280	92.2198	0.7
01-22-82	23:54:22.8	3.6	35.2165	92.2105	0.3
01-24-82	03:22:44.7	4.1**	35.1983	92.2198	3.5
01-27-82	23:29:42.2	2.8	35.2007	92.2157	0.9
02-01-82	05:55:08.2	3.3	35.1842	92.2270	4.8
02-01-82	07:25:02.6	3.2	35.1892	92.2208	7.2
02-03-82	06:24:46.6	2.6	35.1885	92.2318	2.7
02-12-82	05:32:12.2	3.0	35.1845	92.2302	3.4
02-16-82	12:38:20.5	2.7	35.1928	92.2322	4.9
02-24-82	19:27:14.1	3.7	35.1987	92.2363	4.6
03-01-82	00:12:09.5	4.0**	35.1872	92.2147	7.9
03-01-82	06:04:09.1	2.7	35.1987	92.2343	6.4
03-09-82	16:01:42.3	2.8	35.1902	92.2325	5.6
03-10-82	03:01:42.6	2.6	35.1987	92.2220	7.3
05-31-82	17:49:20.4	3.4	35.1858	92.2040	1.1
05-31-82	18:21:19.8	3.6	35.1953	92.2302	2.3
06-04-82	21:23:37.9	2.6	35.2198	92.2140	0.8
06-12-82	15:00:27.6	2.9	35.2007	92.2573	4.1
60-26-82	15:56:05.7	3.0	35.1860	92.2430	4.5
06-30-82	16:21:55.4	3.2	35.1900	92.2250	6.6
07-05-82	03:07:44.6	2.9	35.1898	92.2293	4.9
07-05-82	04:13:49.8	3.8	35.1841	92.2292	5.7
08-09-82	11:12:31.6	3.1	35.1910	92.2408	4.1
09-25-82	23:17:05.5	3.4	35.2055	92.2335	4.8
09-27-82	10:22:32.5	2.9	35.1858	92.2290	4.6
09-27-82	17:17:12.3	2.7	35.0333	92.2202	2.1
10-29-82	19:27:39.2	2.8	35.2075	92.2103	0.9
11-12-82	00:39:39.3	2.6	35.2002	92.2145	2.8
11-17-82	19:00:43.2	2.7	35.2008	92.2335	0.9
11-21-82	16:27:39.4	2.8	35.1982	92.2412	4.8
11-21-82	16:35:28.6	3.3	35.2062	92.2192	1.2
11-21-82	18:42:39.8	2.6	35.1995	92.2140	1.2
12-22-82	20:47:16.8	2.8	35.1977	92.2015	1.3

** mbLg

present the locations of 34 Southern Appalachian events located by SARSN in 1982. The epicentral uncertainty for these earthquakes is 1-2 km if the location is within the limits of the network and 6-12 km for outlying events.

At present only duration magnitudes are determined by TEIC; amplitude magnitudes await full system calibration of the networks. More detailed information is published in the TEIC Quarterly Seismological Bulletin along with special reports on significant events. Subscriptions are available upon request from TEIC.

Arkansas Swarm

The Arkansas earthquake swarm began on January 12, 1982, and continued throughout the year (Johnston, 1982). Over 19,000 events were recorded during this period by a temporary network of seismographs deployed in the area. The epicenters generally cluster in an area roughly 8 km x 8 km, located west of the town of Enola,

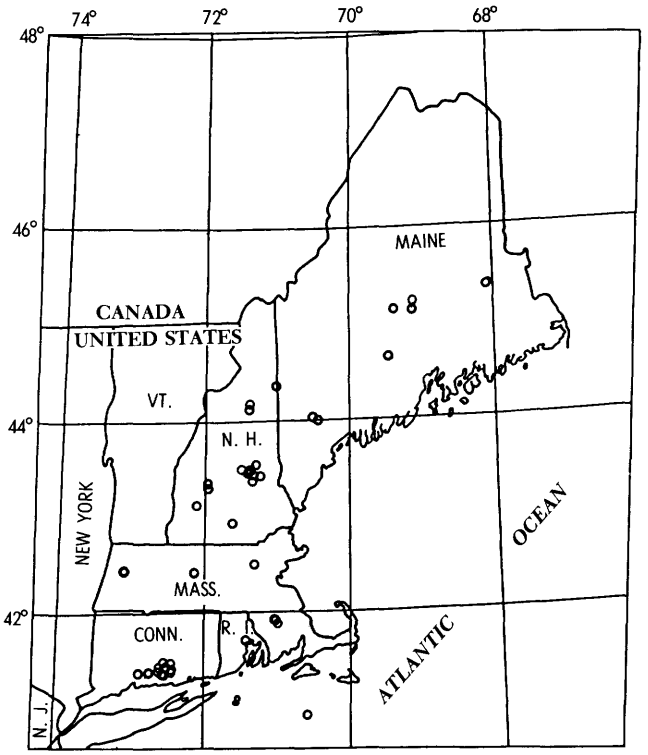

Figure 46. New England earthquakes during 1982 with magnitudes greater than 0.0.

Arkansas. This confined source region is depicted by the star in figure 44. Table 7 contains hypocenter parameters for 50 magnitude 2.6 or greater events. The peak swarm activity occurred in late January, 1982, but bursts of activity recur periodically. Ninety-three events were felt by local residents during 1982. The largest event (Mn 4.5-January 20, 1982) was maximum intensity VI and felt over 75,000 km^2. The temporary array recorded events as small as duration magnitude -3.5. Special reports are issued semi-annually updating the swarms activity and are available upon request from TEIC.

New England Earthquakes, 1982

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During 1982 Weston Observatory of Boston College continued to monitor New England seismicity (fig. 46). During that period a network of 30 stations, all but one remote, comprised the Weston Observatory network, and an additional nine stations were operated by the Massachusetts Institute of Technology. A quarterly bulletin which reports the seismicity of northeastern United States in cooperation with the Massachusetts Institute of Technology Network and other local seismic networks continued to be published by Weston Observatory.

In 1982 a digital recording ability was being developed and a program for the detection and location of earthquakes was being prepared. The Massachusetts

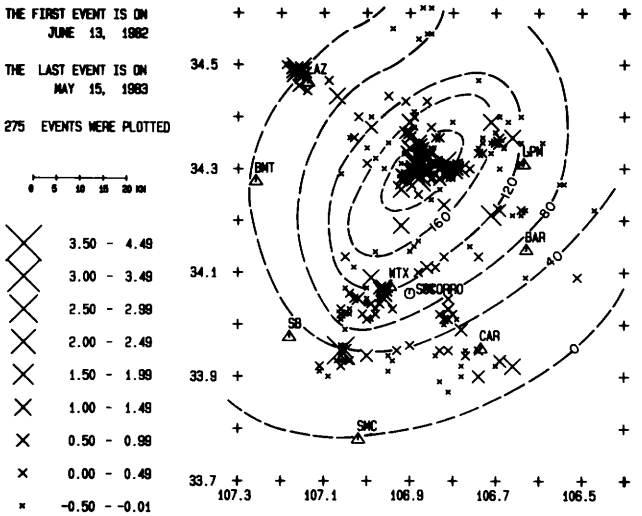

Figure 47. Seismicity of the Socorro, New Mexico, area for the period June 13, 1982 to May 15, 1983. The contours are surface uplift in millimeters for a 40-year period (Reilinger and others, 1980). The triangles mark the location of stations in the present seismic network.

Institute of Technology Network is recording their nine stations digitally in an event-triggered mode.

The most newsworthy seismic event to disturb New England was the New Brunswick, Canada, earthquake of January 9, 1982. Two major aftershocks followed on January 9 and January 11. All were felt over a wide area including the Maritimes, New England, Quebec and Eastern New York. There was scattered local damage in northern Maine (cracked walls and concrete floors). The MM intensity for the region of eastern Maine is reported as V. Weston Observatory recorded more than 1200 aftershocks of magnitude 1.5 or greater during the year.

On January 19, 1982, at 0014 UTC, a magnitude 4.7 earthquake occurred to the west of Laconia, New Hampshire. This was the largest earthquake to occur in New England since the Ossippee, New Hampshire earthquakes of December, 1940. Maximum intensity V was reported for the region surrounding the epicenter. The felt area boundary runs through southern Connecticut, central New York, southern Quebec and south-central Maine. The area within the intensity IV contour was 125 km^2. This event was very important because it triggered a number of strong motion instruments throughout New England, including several at the Franklin Falls, New Hampshire dam located about 7 km from the epicenter.

Immediately after the principal shock, portable seismometers were set out in and around, Sanbornton, New Hampshire, where preliminary analysis had located the shock. The first was in operation 9 hours later. During the following 4 weeks, 58-aftershocks were recorded. Twenty of these were recorded on three or more different instruments. These aftershocks show a roughly north-south trend for a cluster of shallow, low magnitude events in the area of Sanbornton known as Gaza. There were two aftershocks, north and south of this cluster and at twice the depth (4 km), during this aftershock sequence.

The eventful month of January 1982, closed with a series of small earthquakes around Taunton, Massachussetts. Three events, the first and largest of magnitude 3.0, were recorded in a period of 2 hours. These were located to the east of Taunton in Lakeville, Massachussetts. The largest event was felt over a wide area of southeastern Massachussetts. Portable instruments were put into the area but no aftershocks were recorded.

A repeat of the 1981 Moodus, Connecticut, earthquake swarm began in June 1982. Over 500 shocks, varying in magnitude from -2.0 to 3.0, were recorded. The epicenter of the largest shock was approximately the same as that of the 1981 principal shock and the depths of the events were 2 km or less.

During the year about 60 shocks, varying in magnitude from less than -1 to 4.7, were recorded in the six New England States. During the year areas showing the greatest activity continued to be: Moodus, Connecticut; Dover-Foxcroft, Maine; and Laconia, New Hampshire.

Socorro, New Mexico Area Earthquakes, 1982

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In early 1982, the U.S. Geological Survey (USGS) and New Mexico Tech (NMT) began a cooperative program of monitoring seismic activity in the Socorro area. By June 13, 1982, signals from five local stations and a station at Albuquerque were being telemetered into the NMT campus. Three additional local stations were added on September 1, September 16, and December 1, 1982, and a station approximately 40 km north of the local network began operation September 16, 1982. Transmission from the Albuquerque station ceased December 29, 1982. Therefore, since June 13, 1982, readings from 6 to 10 stations have been available for determination of strengths and locations of earthquakes in the Socorro area.

The present network is the best ever deployed for defining the geographic distribution of epicenters throughout the Socorro area (from 33.7° N. to 34.6° N. and from 106.4° W. to 107.2° W.), However, the stations are rather widely separated and tightly constrained focal depths are not commonly obtained.

Shown in figure 47 is a map of epicenters for the period of June 13, 1982 through May 15, 1983. Plotted are epicenters for 275 earthquakes ranging in strength from magnitude -0.5 to 4.0. The epicenters were calculated using the algorithm HYPO 71 Revised (Lee and Lahr, 1975) with a half-space crustal velocity of 5.85 km/sec and a Poisson's ratio of 0.25 (Ward and others, 1981). Errors in epicentral location (ERH in HYPO 71) average 1.3 km with a standard deviation of 1.0 km. As expected, errors in focal depth (ERZ in HYPO 71) are greater, averaging 3.2 km with a standard deviation of 2.0 km. These errors are influenced in part by the crustal structure used in the location program. Because the half-space model is only an average of crustal structure over the area, the true errors in hypocenter coordinates will be greater than those calculated.

Magnitudes of the earthquakes were calculated from durations of ground motions on the seismograms using an empirical equation derived by seismologists at Los Alamos National Laboratory for northern New Mexico earthquakes (Newton and others, 1976). Our own study indicates that the equation is applicable to earthquakes in the Socorro area in the magnitude range of 1 to 4 but it appears to progressively underestimate magnitudes for shocks weaker than magnitude 1.

The total number of locatable earthquakes from June 13, 1982 to May 15, 1983, was considerably greater than the 275 events shown on figure 47. A significant part of the total activity occurred in two major earthquake swarms and numerous smaller ones. Generally only the stronger events within a swarm were located.

The first major swarm occurred from February 25 to March 12, 1983, and was centered at 34.32° N. and 106.88° W. Approximately 330 shocks in the swarm had magnitudes ranging from -0.5 to a maximum of 4.0. The second swarm occurred from May 10 to May 14, 1983, and was centered at 34.06° N. and 106.96° W. Approximately 20 shocks in this swarm had magnitudes ranging from -0.5 to a maximum of 1.9.

A few months prior to full operation of the Socorro seismic network, two other major swarms were recorded in the area. From April 4 to April 20, 1982, a swarm centered at 34.16° N. and 106.79° W. generated about 65 earthquakes in the magnitude range from -0.5 to a maximum of 2.1. Eighteen days later, from May 8 to June 3, 1982, a swarm centered at 34.07° N. and 106.86° W. generated approximately 115 earthquakes above magnitude -0.5. The three largest quakes of this swarm had magnitudes of 2.8, 2.8, and 3.3.

The seismic activity in the interval April 4, 1982, to May 15, 1983, was above normal both in number of major swarms and number of "felt" or perceptible shocks. Felt earthquakes generally have magnitudes greater than or equal to 2.8 in the Socorro area. Earthquakes exceeding this magnitude occurred five times during the major swarms and once in a minor swarm centered at 33.95° N. and 107.06° W. The magnitude 4.0 earthquake during the 15-day February-March, 1983, swarm was the strongest earthquake in the Socorro area since an event during a swarm in July 1960 (Sanford and Holmes, 1961). The 1960 swarm was initially located at 34.36° N. and 107.04° W. but a later calculation placed it 25 km to the east at 34.36° N. and 106.77° W. This location, which has an uncertainty of approximately ± 5 km, is very close to or within the region of highest activity in figure 47.

Shown in figure 47 along with the earthquake epicenters are contours of surface uplift determined from releveling of elevation bench marks in the Socorro area (Reilinger and others, 1980). The contours represent deformation that accumulated during a 40-year period.

The greatest concentration of seismic activity occurs where surface uplift is a maximum. The energy release for earthquakes in this region is approximately 50 times greater than for all other earthquakes on the figure. The strongest earthquakes in the 22-year period preceding figure 47 were also in the area of maximum surface uplift. Thirteen months of continuous monitoring of seismic activity from June 1, 1969 to June 30, 1970 also showed the maximum number of shocks and energy release near the apex of surface uplift (Sanford and others, 1972). The pattern of seismicity for the latter study was also strikingly similar to that shown in figure 47.

The most interesting feature of the distribution of seismic activity in the Socorro area is the diffuse bands

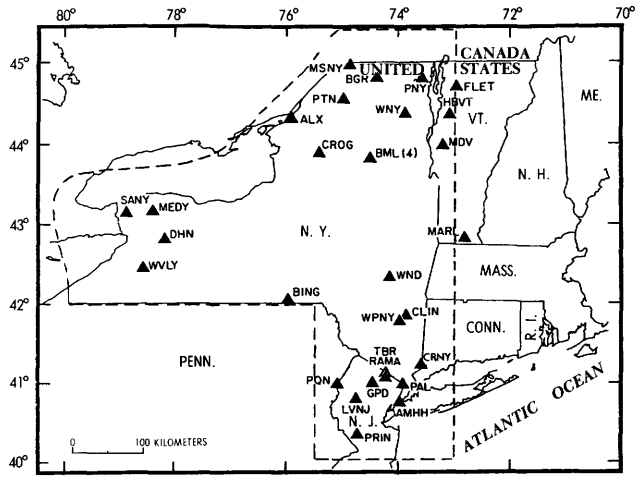

Figure 48. Station map of the Lamont-Doherty seismic network. Within the area outlined by the dashed line the network catalog is complete for $M \geq 2.0$.

of epicenters which radiate outward from the central cluster of shocks. These bands cut obliquely across the structural grain of the region and thus may be related to radial zones of extension generated by the uplift. Rift zones associated with volcanoes, such as those in Hawaii, have a similar radial pattern and presumably the same origin (Stearns, 1966).

Earthquakes in New York State and Adjacent Areas, 1982

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Lamont-Doherty Geological Observatory (L-DGO) operates a seismic network of 29 single-component short period seismic stations along with 3 three-component stations within New York, New Jersey and Vermont (fig. 48). Seventy-two earthquakes were located in 1982 by this network (fig. 49). Earthquakes above magnitude 2.0 in New York, New Jersey and Vermont are listed in table 8. Some earthquakes of particular interest include the following:

1. On February 8 a magnitude 2.4 earthquake occurred near East Berne, N.Y. It was followed by nine aftershocks within the next 12 hours. Until 1980 the mid-Hudson region had no known recorded earthquakes. Since then numerous events have "filled in" this gap in the seismicity and by the end of 1982 the map of instrumentally recorded earthquakes more closely resembled historical seismicity maps. (See table 8 for a more complete listing of earthquakes in this area).
2. Earthquake activity that began in 1981 continued into 1982 in the Southern Lake Champlain region with earthquakes on March 15, March 16, April 27 and May 9. Prior to 1981, no earthquakes had been located there by the L-DGO network.

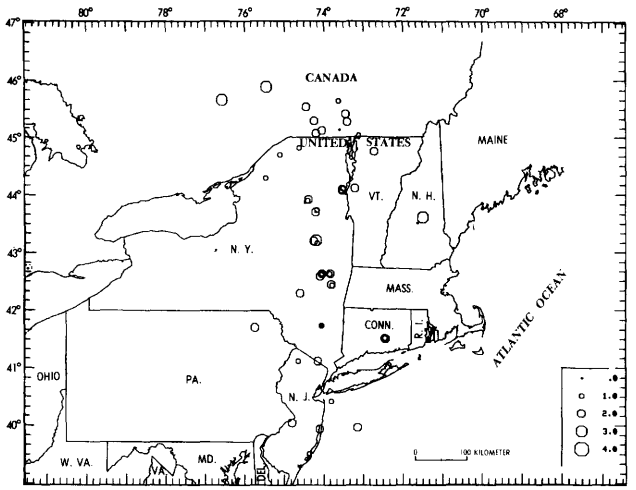

Figure 49. Earthquakes located by the Lamont-Doherty seismic network in 1982.

Table 8. *Earthquakes M ≥ 2.0 in New York, New Jersey, and Vermont, 1982*

Date	UTC Origin Time Hr.Min.	Location	Lat. N deg min	Long W. deg min	Mag. Mc
Feb 08	1616	NY, East Berne	43°38'	74°03'	2.4
Mar 15	0359	NY, Port Henry	44°05'	73°32'	2.3
Mar 29	0937	offshore	39°58'	73°09'	2.0
Apr 12	2214	NJ, Burlington	40°03'	74°49'	2.8
June 12	1926	NY, Roxbury	42°17'	74°36'	2.4
July 29	0437	NJ, Seaside	39°57'	74°07'	2.4
Aug 03	2312	VT, Bakersfield	44°45'	72°44'	2.9
Aug 09	0952	NY, Niverville	42°26'	73°49'	2.0
Aug 10	1359	NY, Blue Mtn Lake	43°55'	74°24'	2.1
Aug 11	0041	NY, Sacandaga	43°12'	74°16'	2.2
Aug 18	0430	NY, Suffern	41°08'	74°09'	2.3
Aug 31	1016	NY, Northville	43°13'	74°12'	3.0
Oct 10	0945	NY, Slingerlands	42°38'	73°50'	2.1
Oct 23	0509	NY, Mineville	44°06'	73°32'	2.5
Oct 25	1336	VT, Middlebury	44°07'	73°13'	2.3
Dec 13	1520	NY, Berne	42°35'	74°06'	2.2
Dec 13	1552	NY, Berne	42°35'	74°06'	2.1

3. A magnitude 2.3 earthquake occurred in Suffern, N.Y., a few kilometers west of the surface trace of the Ramapo fault. It was felt very locally by a few people and had a well-constrained depth of 6 km.
4. On April 12 a magnitude 2.8 earthquake occurred near Burlington, New Jersey, within the Fall Zone between the Atlantic Coastal Plain and Piedmont provinces. It was felt mildly throughout Burlington County.

Other observations include:

1. Continued activity throughout the Adirondack Mountains and into Canada which has had relatively high seismicity historically and during the network operation.
2. A lack of activity in central New York State, which had only one recorded earthquake (in 1981) since the inception of the L-DGO network
3. A lack of activity in western New York State which had two large earthquakes in 1966 and 1967 and continued minor activity into the early 1970's.

Oklahoma Earthquakes, 1982

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A statewide network of 11 seismograph stations is recording seismological data in Oklahoma (fig. 50). The Oklahoma Geophysical Observatory station, TUL, has been recording earthquake data since December 1961. The observatory, located near Leonard, Oklahoma, in southern Tulsa County, operates seven seismometers, three long period and four short period, which are installed in a vault detached from the main building. The seismic responses at TUL are recorded on 14 paper-drum recorders and one digital recorder. Accurate timing is assured by a microprocessor clock that is continually locked to the National Bureau of Standards cesium-beam clocks by low-frequency radio transmissions broadcast by WWVB (Lawson, 1980). Seven semi-permanent volunteer-operated seismograph stations, three radio-telemetry seismograph stations, and one volunteer-operated triggered-digital seismograph complete the Oklahoma Geological Survey's seismic network. The operation and maintenance of 11 of the remote stations is being supported by the U.S. Nuclear Regulatory Commission.

Each of the seven volunteer-operated seismograph stations consists of a Geotech S-13, short-period, vertical seismometer; a Sprengnether MEQ-800-B unit, including amplifier, filters, ink-recording unit, and a clock; and a Kinemetrics time-signal-radio receiver for high-frequency WWV time signals. Each radio-telemetry system consists of one Geotech S-13 seismometer and one radio-telemetry unit. The telemetry unit amplifies the seismometer output and uses this output to frequency-modulate an audiotone. A 500-milliwatt, crystal-controlled transmitter limits the line-of-sight transmission to 80 km. Seismograms from the radio-telemetry stations are recorded at the Oklahoma Geophysical Observatory.

In May 1982, a new station, OCO, was opened at the Omniplex museum in Oklahoma City. Omniplex staff are responsible for seismogram changing and most maintenance. Oklahoma Geophysical Observatory staff help supervise the operation of OCO, interpret the data, and archive the seismograms with all other Oklahoma network seismograms.

In November the Meridian station (MRO) was moved to a location near Altona (ATO), in Kingfisher County. The temporary five-station microearthquake array near El Reno, Canadian County, was closed, but the best station of the array, Shell Creek (SCE1), was made semi-permanent (Lawson and Luza, 1982).

All Oklahoma earthquakes recorded on seismograms from three or more stations are located. In 1982, 57 Oklahoma earthquakes were located (fig. 51, table 9).

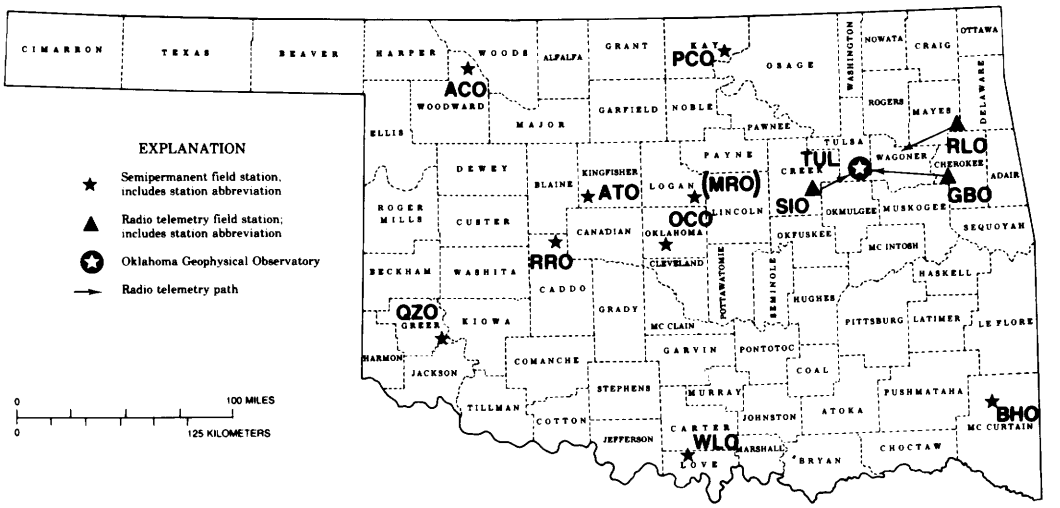

Figure 50. Active seismograph stations in Oklahoma.

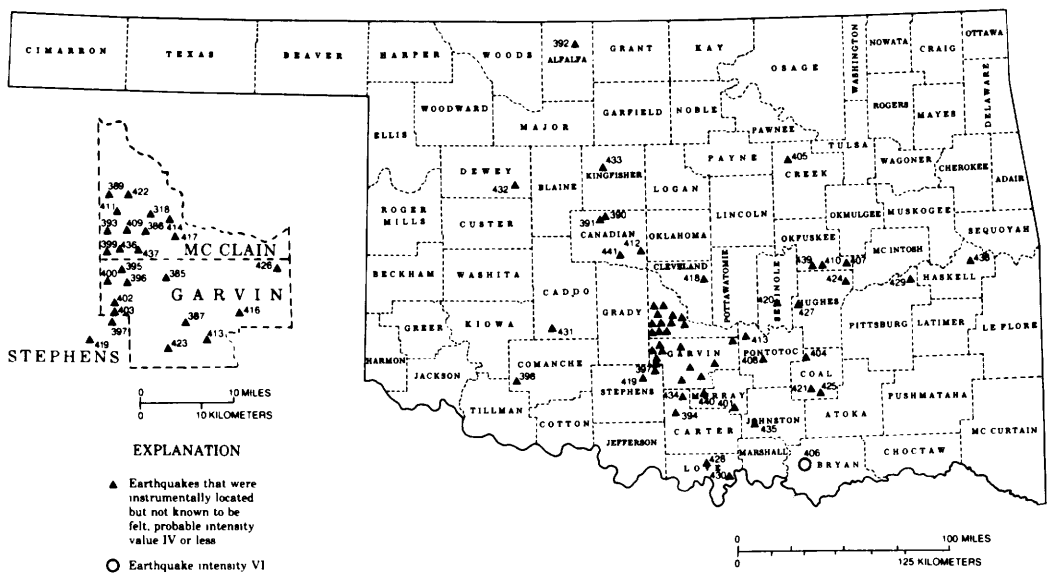

Figure 51. Distribution of Oklahoma earthquakes for 1982. Numbers correspond to event numbers in table 9. McClain and Garvin Counties are shown in detail.

Only one earthquake, at Durant, Oklahoma, was reported felt in 1982. This earthquake damaged water pipes at one house and had a Modified Mercalli (MM) intensity of VI. The felt area from the Durant earthquake (event no. 406) was probably restricted to a few tens of square kilometers away from the epicentral location. Details of Oklahoma seismicity and information on the catalog format are described in Oklahoma Geology Notes (Lawson and Luza, 1983).

Twenty-three earthquakes occurred in a 30-km-wide zone that extends 50 km southward from Blanchard through McClain, Grady, and northern Garvin Counties. Only three earthquakes occurred in Love County in 1982.

Also in 1982 the first known earthquakes in Stephens and Murray Counties brought the number of Oklahoma counties in which earthquakes are known to have occurred to 60.

Tables 9. *Oklahoma earthquake catalog for 1982*

Event Number	Date and Origin Time (UTC)		County	Intensity (MM)	Magnitudes 3Hz	bLg	DUR	Latitude (°N.)	Longitude (°W.)	Depth (km)[1]
385	JAN 12	234025 00	GARVIN		2.0			34 742	97 406	5.0R
386	JAN 13	005638 98	McCLAIN		2.0	1.8		34 949	97 492	5.0R
387	JAN 13	040424 42	GARVIN		2.4	2.2	2.1	34 643	97 337	5.0R
388	JAN 13	070447.65	McCLAIN		2.2	2.0	- 2.1	34 961	97 477	5.0R
389	JAN 13	071308.26	McCLAIN		1.8	1.8		35.025	97.561	5.0R
390	JAN 15	095216.96	CANADIAN		2.8	2.7	- 2.6	35.714	98.029	5.0R
391	MAR 13	014149.93	CANADIAN		2.6	2.5	2.6	35.699	98.038	5.0R
392	MAR 15	065825.60	ALFALFA		2.4		2.0	36.908	98.226	5.0R
393	MAR 15	210750.27	McCLAIN		1.8		1.8	34.934	97.600	5.0R
394	MAR 15	211818.92	CARTER		1.8		1.8	34.358	97.467	5.0R
395	MAR 15	213910 98	GARVIN		2.3		2.2	34.832	97.608	5.0R
396	MAR 15	223009.37	GARVIN		2.3		2.1	34.780	97.600	5.0R
397	MAR 15	234439 84	STEPHENS		1.6		1.7	34.663	97 600	5.0R
398	MAR 16	002142.02	COMANCHE		2.4		1.9	34 593	98 805	5.0R
399	MAR 16	015856.74	McCLAIN		1.5		1.5	34.895	97.653	5.0R
400	MAR 16	063627.90	GARVIN		1.7		1.7	34.776	97.623	5.0R
401	MAR 16	205029 41	MURRAY				1.7	34.347	96.961	5.0R
402	MAR 16	210154.45	GARVIN		2.0		1.7	34.749	97.610	5.0R
403	MAR 18	095152.95	GARVIN		1.9		2.0	34.715	97.608	5.0R
404	MAR 23	141.709.98	COAL		2.5	2.4	2.0	34.729	96.399	5.0R
405	MAR 24	044836.20	CREEK		2.4		1.7	36.051	96 452	5.0R
406	MAY 3	075448.65	BRYAN	6	2.8	3.1	2.6	33.990	96.473	5.0R
407	MAY 12	014140.74	OKFUSKEE		2.1	1.5	1.8	35.324	95 987	5.0R
408	MAY 21	163844.02	PONTOTOC		1.9	1.8	1.9	34.703	96 668	5.0R
409	MAY 29	204317.32	McCLAIN		2.1	2.3	2.4	34.934	97.539	5.0R
410	MAY 30	234325.24	OKFUSKEE		2.3		1.6	35.301	96.213	5.0R
411	JUN 13	041342.83	McCLAIN		1.8	1.8	1.8	34.992	97.557	5.0R
412	JUN 13	061536.73	CANADIAN		2.1	1.7	1.8	35.451	97.698	5.0R
413	JUL 8	011537.52	PONTOTOC		1.8		1.7	34.856	96.8.2	5.0R
414	JUL 9	033811.35	McCLAIN		2.0			34 963	97 432	5.0R
415	JUL 9	042746.80	GARVIN		1.5			34 586	97.240	5.0R
416	JUL 9	070054 95	GARVIN		1.9			34.644	97.150	5.0R
417	JUL 9	090250.59	McCLAIN		2.2	1.9	2.3	34.925	97.418	5.0R
418	JUL 9	092934.61	CLEVELAND		1.9			35.226	97.180	5.0R
419	JUL 20	033646.22	STEPHENS		2.0	2.1	2.2	34.590	97.694	5.0R
420	JUL 26	044921.61	SEMINOLE		2.0	2.1	2.1	35.063	96.561	5.0R
421	AUG 3	193206.24	COAL		2.0	2.2	2.1	34.481	96.303	5.0R
422	AUG 5	101043.31	McCLAIN		2.3	1.9	2.2	35.043	97.497	5.0R
423	AUG 11	211726.83	GARVIN		2.3	2.1	2.1	34.565	97.432	5.0R
424	AUG 13	155807.15	HUGHES		1.8	2.2	2.2	35.242	96.006	5.0R
425	AUG 18	101856.86	COAL		2.6	2.7	2.5	34 465	96.227	5.0R
426	AUG 22	010102.42	GARVIN		2.3		1.8	34.840	96.936	5.0R
427	AUG 22	044615.32	HUGHES		2.0		1.9	35.069	96.459	5.0R
428	SEP 8	123510.75	LOVE		2.6	2.5	2.4	34.014	97.338	5.0R
429	SEP 10	113116.69	PITTSBURG		2.1		2.1	35.223	95.464	5.0R
430	SEP 21	115555.82	LOVE		2.2	2.3		33 866	97 003	5.0R
431	SEP 22	040033 69	CADDO		2.6	2.2	2.4	34 894	98.429	5.0R
432	NOV 16	060228 42	DEWEY		2.3		1.5	35.839	98.705	5.0R
433	NOV 16	082725 90	KINGFISHER		2.2	1.6	1.6	35.972	97.991	5.0R
434	DEC 14	214955.09	CARTER		2.2	2.7	2.1	34 463	97.378	5.0R
435	DEC 15	043321.62	JOHNSTON		1.8		1.7	34.246	96.440	5.0R
436	DEC 18	084112.09	MCCLAIN		2.0	1.9	2.1	34.887	97.588	5.0R
437	DEC 19	051542.94	MCCLAIN		3.1	2.9	2.7	34.891	97.584	5.0R
438	DEC 19	214500.07	HASKELL				1.8	35.290	94.950	5.0R
439	DEC 20	221046.13	OKFUSKEE		2.3	2.3	2.4	35.305	96.256	5.0R
440	DEC 21	180848.38	MURRAY		2.1	2.2	2.0	34.489	97.237	5.0R
441	DEC 22	174253.73	CANADIAN		2.4	2.8	2.4	35.396	97.932	5.0R

[1]The hypocenter is restrained (R) at an arbitrary depth of 5.0 km, except where indicated, for purposes of computing latitude, longitude, and origin time.

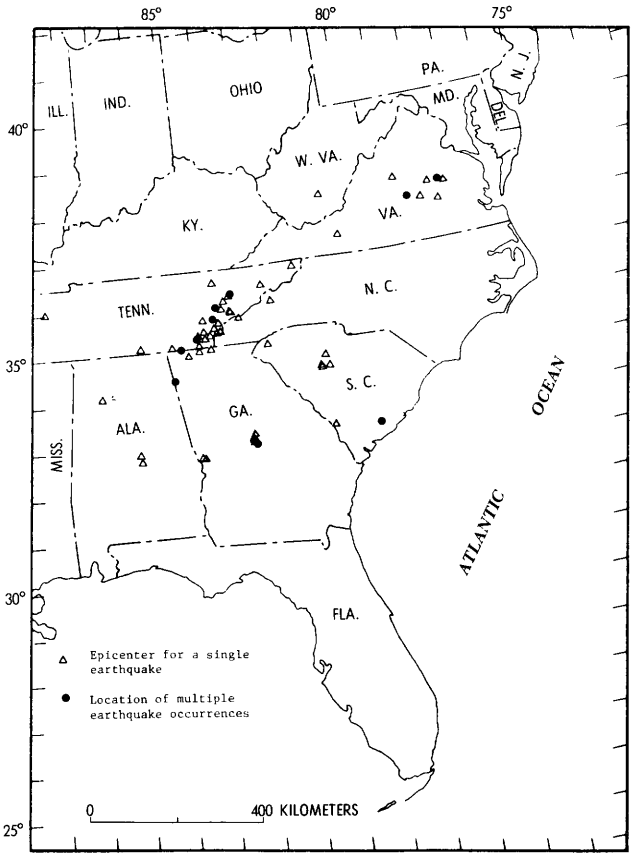

Figure 52. Southeastern United States earthquake epicenters during 1982.

The damaging earthquake in Bryan County, near Durant, was the only known earthquake to occur there in any year except 1968 when a swarm of 14 earthquakes occurred. It is interesting that the May 3, 1982, Bryan County earthquake had the same intensity (MM VI) as the largest of the 1968 earthquakes.

In 1982, Alfalfa County had its fourth earthquake since 1977. The Creek-Okfuskee county border area had four more earthquakes in 1982, bringing the total to 14. Alfalfa County and Creek-Okfuskee Counties are two areas of minor seismicity that are rather isolated from other trends of seismicity.

Southeastern United States Earthquakes, 1982

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A total of 71 earthquakes ($0.3 \leq M \leq 3.5$) were detected and located within the southeastern United States during 1982 (fig. 52). Seven of those events had a magnitude of 3.0 or greater and/or were felt. Additionally, 52 microearthquakes, of magnitude less than 3.0 (and not felt), were located in the Twiggs County, Georgia, area (38) and in South Carolina (14).

Table 10. *Southeastern United States earthquakes, 1982*

(Felt and/or with $M \geq 3.0$)

Date (1981)	Origin Time (UCT)	Lat. (°N.)	Long. (°W.)	Depth (Km)	Mag. (MbLg/Md)	State Felt
02 Jan.	02:00:26.3	35.18	86.42	11.3	2.8	TN
28 Jan.	04:52:51.9	32.98	81.39	7.0	3.4	SC
06 May	07:18:10.9	37.85	77.58	9.7	2.0	VA
16 June	18:40:58.6	38.13	78.84	10.9	2.1	VA
05 Sep.	10:11:09.4	35.20	84.51	13.4	3.2	TN
24 Sep.	22:19:16.9	35.69	84.25	10.5	3.5	TN
31 Oct.	03:12:15.6	32.66	84.87	5.0F	3.1	AL

The largest event that occurred in the region during 1982 was a magnitude 3.5 event near the Knoxville, Tennessee, area where it was felt with intensity V (table 10). Seismic activity was well distributed throughout the southern Appalachians: Alabama (5), Georgia (9), North Carolina (1) South Carolina (6), Tennessee (38), Virginia (11) and West Virginia (1) (fig. 52). Of particular interest is the continued higher level of seismicity in eastern Tennessee and the ongoing swarm in central Georgia (Macon, Twiggs County locale).

A data listing of most of the earthquakes in 1982 was presented in Southeast United States Seismic Network Bulletins No. 10 and 11. Copies of these reports, and a listing (on either magnetic tape or in printed form; Bulletin 10A) of hypocenters reported in Bulletins 1-10, (July 1, 1977 - June 30, 1982) may be obtained by contacting the authors.

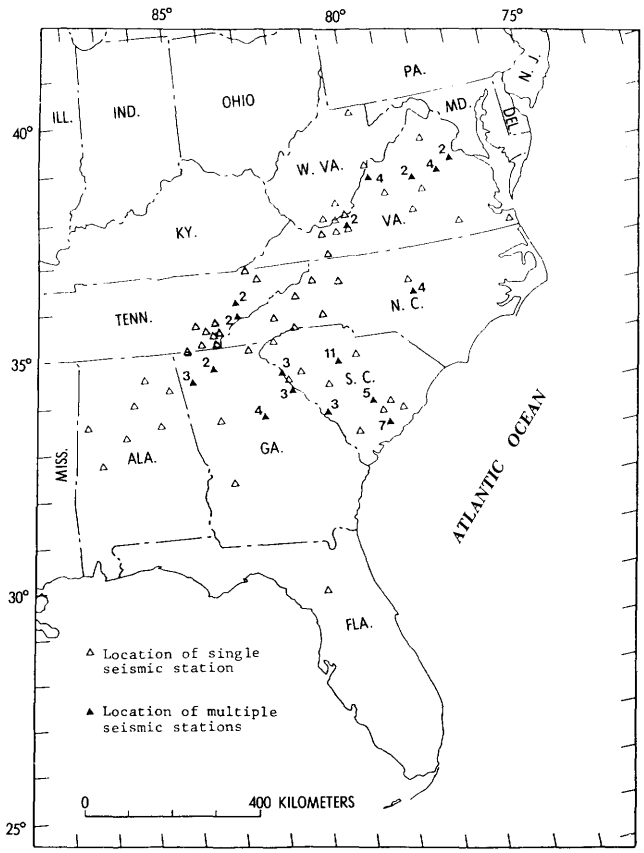

Figure 53. Southeastern United States seismic network stations operating at the close of 1982.

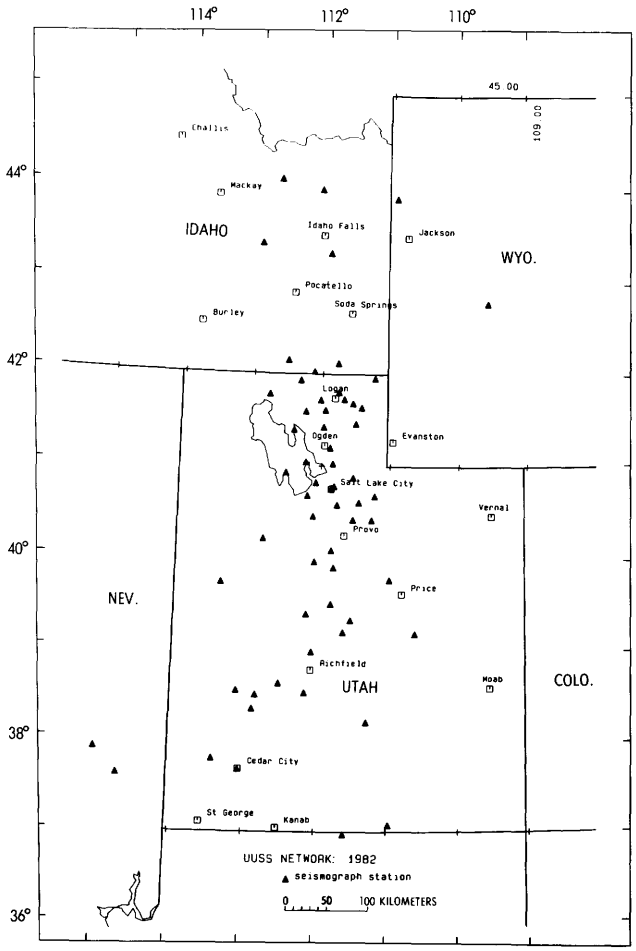

Figure 54. University of Utah seismographic network, 1982.

The number of seismograph stations operating in the region varied from 108 to 111. Figure 53 shows the station distribution at the end of 1982.

Utah Earthquakes, 1982

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The University of Utah Seismograph Stations record a regional seismic network consisting of 61 short-period stations, 12 of these operated and maintained by other agencies. The 1982 network configuration is shown in figure 54. Station spacing ranges from 15 to 35 km in north-central Utah along the Wasatch fault zone to approximately 30 to 100 km in adjacent area of central and southwestern Utah and southeastern Idaho. Seismic data are telemetered via radio, telephone, and/or microwave channels to the University of Utah in Salt Lake City. An on-line DEC 11/34 computer facility provides event detection and digital central recording of the network. In addition to vertical components, three stations have horizontal short-period seismometers. Dugway, Utah (DUG), operates as a WWSSN station. Wood-Anderson type seismographs operate at DUG and Salt Lake City (SLC).

Epicenters for 584 earthquakes located in the Utah region are shown in figure 55. The largest event during 1982 occurred on May 24, 1982 approximately three miles southeast of Richfield near Annabella. Slight damage was reported in the immediate vicinity. Other significant earthquakes during 1982 shown in figure 55 include, from north to south:

1. an earthquake swarm near Soda Springs, Idaho which began in December 1981 and included a magnitude 4.7 earthquake on October 14, 1982. The majority of this swarm occurs just north of lat. 42.5° N. and does not appear on figure 55;
2. ongoing microseismicity 50 to 75 km west of Logan, Utah within Hansel Valley, Pocatello Valley and surrounding areas including a magnitude 3.3 earthquake on December 24, 1982;
3. continued activity with magnitudes less than 1.5 east and south of Logan, Utah beneath the Bear River Range;
4. a magnitude 2.7 event on August 29, 1982 approximately 20 km northeast of Salt Lake City and felt in eastern Salt Lake County;
5. clustered earthquakes in the magnitude 2 to 3 range southwest and north of Price in the vicinity of active coal mining in central Utah; and
6. scattered earthquakes (magnitudes less than 3.5) throughout south-central and southwestern Utah in a broad NE-SW trending belt between Richfield and Cedar City.

Details of Utah seismicity and information in bulletin format are available by contacting the University of Utah Seismograph Stations, 704 W. C. Browning Bldg., Salt Lake City, Utah, 84112-1183.

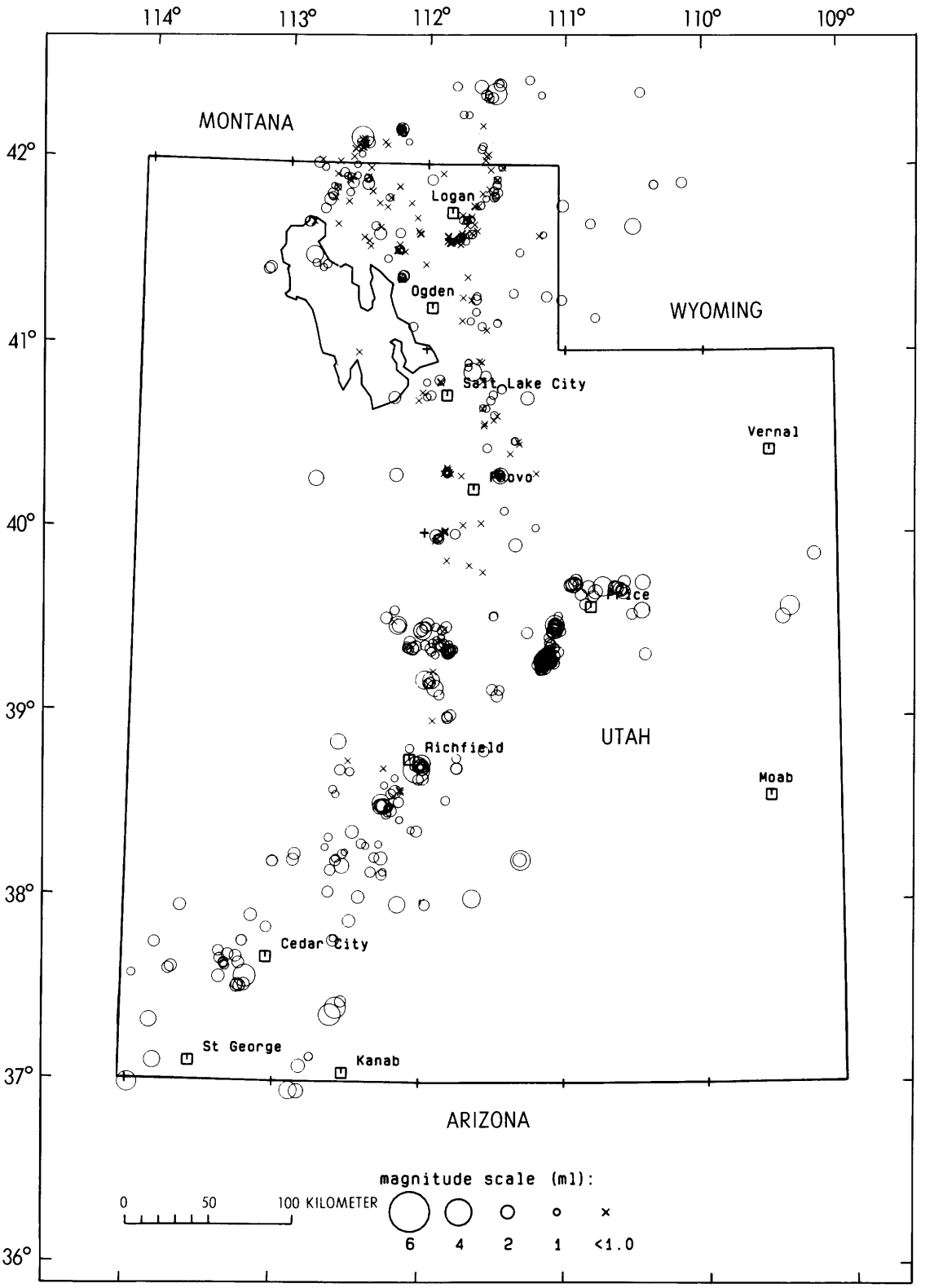

Figure 55. Utah region earthquakes during 1982

MISCELLANEOUS ACTIVITIES

Crustal Movement Studies

Horizontal Control Surveys

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The National Geodetic Survey produced mathematical models of historical horizontal crustal deformation for 16 regions that, in combination, span California (fig. 56). Model parameters were estimated from triangulation, taped and electronically measured distances, and astronomic azimuths. The models relate crustal deformation to the episodic movements experienced during large earthquakes (magnitude greater than 6), secular slip rates on geologic faults, and secular strain rates over large geographic areas. The episodic movements were modeled in accordance with the theory of dislocation in an elastic halfspace. For the secular motion each region was partitioned into a mosaic of districts that were allowed to individually translate, rotate, and deform homogenously as a linear function of time. The models serve to maintain the positional accuracy of the National Geodetic Reference System and to assist in the design of future crustal deformation monitoring programs.

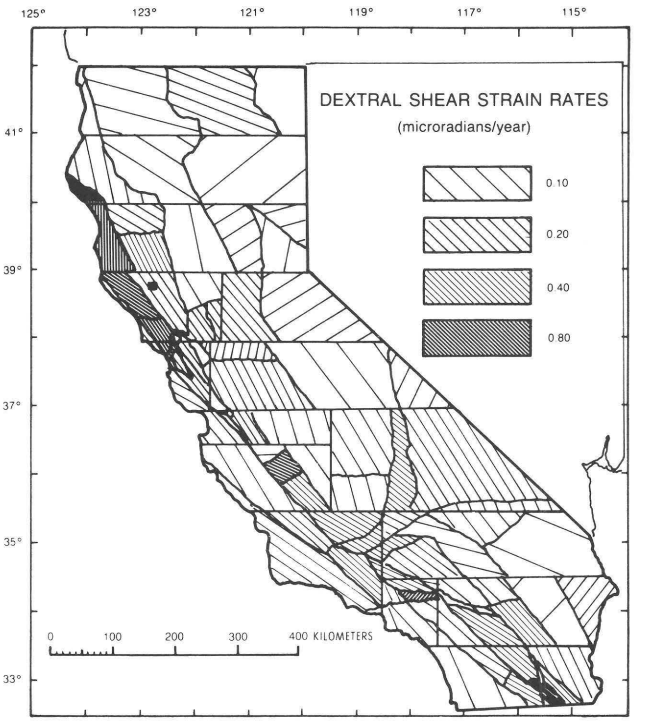

Figure 56. Secular shear strain pattern for California as derived from historical geodetic data. The line patterns designate the directions and magnitudes of maximum dextral (right-lateral) shear strain rates for the mosaic of districts. Shearing between the North American and Pacific plates dominates the regional stress field producing the overall northwest-southeast trend for the direction of maximum dextral shear strain. The displayed secular motion excludes that movement directly associated with the larger California earthquakes.

Tsunamis

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During 1982, two tsunamis were reported to the National Oceanic and Atmospheric Administration (NOAA).

On March 21, an earthquake (magnitude 6.7MS) near the coast of Hokkaido, Japan about 140 km southeast of Sapporo (42.158° N., 142.361° E.), caused a tsunami recorded at heights of 24 cm at Hachinohe and 80 cm at Urakawa.

The December 19 earthquake, located south of the Tonga Islands (24.133° S., 175.864° W., magnitude 7.7MS) generated a tsunami that was fairly widely recorded. Recorded heights included 15 cm at Papeete, Tahiti, 9 cm at Pago Pago, American Samoa, 4.5 cm at Honolulu, Hawaii, and 6 cm at Kailua-Kona, Hawaii.

Principal Earthquakes of the World

Table 11 lists principal world earthquakes for 1982. The list has been included in this annual series since 1941. It includes earthquakes of magnitude 6.8 or greater; those of smaller magnitude that were locally destructive to life and property; and events of unusual interest. The principal source of table 11 was the Preliminary Determination of Epicenters, Monthly Listing.

Table 11. *Principal earthquakes of the world during 1982*

Date (1982)	Origin time (UTC) hr min sec	Geographic Coordinates Lat. (°)	Long. (°)	Depth (km)	USGS magnitude mb	MS	Other magnitude	Region	Remarks
Jan. 11	06 10 06.4	13.752 N.	124.358 E.	46	6.0	7.1	7.2MS(B) 7.4MS(P)	Luzon, Philippine Islands.	Several injured and some damage at Virac, Catanduanes.
Jan. 18	19 27 24.4	40.004 N.	24.319 E.	10	5.8	6.8	6.8MS(B) 7.0MS(P)	Aegean Sea	Felt strongly throughout Greece. Also felt in Bulgaria, Italy, Turkey, and Yugoslavia.
Feb. 20	13 26 50.3	10.861 S.	166.015 E.	36	6.0	6.8	6.8MS(B) 6.6MS(P)	Santa Cruz Islands.	
Mar. 21	02 32 07.7	42.158 N.	142.361 E.	44	6.4	6.7	6.5MS(B) 6.4MS(P)	Hokkaido, Japan	One hundred ten injured and extensive damage on southern Hokkaido. Tsunami recorded.
Mar. 23	05 10 07.3	12.405 S.	77.670 W.	57	5.1			Off the coast of Peru.	Two killed and damage in the Lima area.
Mar. 28	23 24 51.1	12.690 S.	76.065 W.	95	6.1			Southern Peru	Three killed and extensive damage (VI) at Lunahuana.
Apr. 06	19 56 53.4	14.315 N.	92.082 W.	65	6.0	6.5	6.8MS(B) 6.3mb(P)	Near the coast of Guatemala.	Felt in Guatemala, El Salvador, and Chiapas, Mexico.
Apr. 13	11 26 47.2	27.926 S.	26.783 E.	5	5.0			Republic of South Africa.	One killed, 20 injured from rock slides in a gold mine near Welkom.
Jun. 07	06 52 37.3	16.607 N.	98.149 W.	41	6.0	6.9	7.2MS(B) 6.7MS(P)	Guerrero-Oaxaca, Mexico border area.	Damage in southern Mexico.
Jun. 07	10 59 40.1	16.558 N.	98.358 W.	34	6.3	7.0	6.9MS(B) 6.3MS(P)	Guerrero-Oaxaca, Mexico border area.	Nine killed, many injured.
Jun. 11	00 38 09.8	17.616 S.	174.414 W.	123	6.3		6.9mb(P)	Tonga Islands	Felt (IV) at Apia, Samoa Islands.
Jun. 15	23 24 28.6	31.907 N.	99.931 E.	10	5.6	5.5		Sichuan Province China.	Ten killed, five injured, and damage in the Garze area.
Jun. 19	06 21 58.0	13.313 N.	89.339 W.	82	6.2		7.0mb(P)	El Salvador	At least 40 killed, many injured, thousands homeless. Extensive damage (VII) and landslides south of San Salvador. Three killed, 40 injured, and considerable damage in Guatemala. Felt in Costa Rica, Honduras, and Nicaragua.

Table 11. *Principal earthquakes of the world during 1982*--Continued

Date (1982)	Origin time (UTC) hr min sec	Geographic Coordinates Lat. (°)	Long. (°)	Depth (km)	USGS magnitude mb	MS	Other magnitude	Region	Remarks
Jun. 30	01 57 34.1	44.679 N.	151.143 E.	33	6.6	6.9	6.9MS(B) 7.1MS(P)	Kuril Islands Region.	Felt (V) on Shikotan and at Kurilsk.
Jul. 07	10 43 03.7	51.225 S.	160.513 E.	10	6.3	7.0	7.3MS(B) 7.1MS(P)	North of Macquarie Island.	
Jul. 23	14 23 53.5	36.194 N.	141.702 E.	37	6.2	6.8	6.3MS(P)	Near the east coast of Honshu, Japan.	Felt (IV JMA) on Honshu.
Aug. 05	20 32 52.9	12.597 S.	165.931 E.	31	6.2	7.1	7.5MS(B) 7.3MS(L)	Santa Cruz Islands.	
Aug. 19	15 59 01.5	6.718 N.	82.680 W.	10	6.2	6.5	7.0MS(B) 6.2MS(P) 6.6MS(L)	South of Panama	Three injured in Costa Rica. Minor damage in Costa Rica and Panama.
Sep. 29	05 50 32.2	14.487 N.	89.121 W.	12	5.5	5.1		Honduras	Three killed, two injured, and many homes damaged in western Honduras. Five hundred fifty-four homes damaged in Guatemala. Nine kilometers of surface faulting near Esquipulas, Guatemala.
Nov. 15	20 07 47.3	35.631 N.	1.324 E.	10	5.0	5.0		Algeria	Three killed, 14 injured ten homes collapsed in the Tissemsilt area.
Nov. 16	23 41 21.0	40.883 N.	19.590 E.	21	5.6	5.5	5.3ML(A)	Albania	One killed, 12 injured, and extensive damage in (VII) in the Fier, Berat, and Lushnje districts.
Dec. 13	09 12 48.0	14.701 N.	44.379 E.	5	6.0	6.0	6.0MS(P)	Yemen	About 2800 killed, 1500 injured, 700,000 homeless, and 300 villages destroyed or badly damaged. Maximum intensity VIII. Landslides and extensional ground cracks in zones up to 15 km long in the epicentral area.
Dec. 16	00 40 48.7	36.148 N.	69.011 E.	36	6.2	6.6	6.9MS(B) 6.8MS(P)	U.S.S.R.-- Afghanistan border region.	Four hundred fifty killed, many injured, and considerable damage in Baghlan province, Afghanistan.
Dec. 19	17 43 54.8	24.133 S.	175.864 W.	33	5.9	7.7	7.4MS(B) 7.3MS(P)	South of the Tonga Islands.	Tsunami recorded.

Table 11. *Principal earthquakes of the world during 1982*--Continued

Date (1982)	Origin time (UTC) hr min sec	Geographic Coordinates Lat. (°)	Long. (°)	Depth (km)	USGS magnitude mb	MS	Other magnitude	Region	Remarks
Dec. 25	12 28 02.8	8.405 S.	123.080 E.	33	5.9	5.9		Flores Island Region.	Thirteen killed, 390 injured, and 1,875 buildings destroyed on Flores Island, Indonesia.

[Abbreviations used in the "Other magnitude" column: (A) National Observatory of Athens, Greece; (B) University of California, Berkeley; (L) Lamont-Doherty Geological Observatory, Palisades, NY; (P) California Institute of Technology, Pasadena]

STRONG-MOTION SEISMOGRAPH DATA

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Introduction

The first engineering seismology program in the United States was administered by the Seismological Field Survey of the Coast and Geodetic Survey (C&GS). This program was begun in 1931 and effectively remained the responsibility of the Seismological Field Survey (SFS) for more than 40 years. During this period the SFS shifted from one acronymic agency to another, including C&GS, ESSA, NOS, NOAA, ERL, ESL, and finally, in 1973, USGS; soon afterwards the SFS became the Seismic Engineering Branch of the USGS. In spite of these numerous high-level administrative changes, the program had retained a distinct identity and its basic objectives and field-level operations have remained remarkably constant throughout the years.

The current program of strong-motion instrumentation is administered by the USGS in cooperation with both private industry and educational institutions as well as numerous Federal, State, and local agencies and organizations. The objectives of the program are to record strong ground motions and the response of representative types of engineered structures during potentially damaging earthquakes and to disseminate processed data and information about the records, sites, and structures to external users in earthquake engineering research and design practice and engineering seismology. The dissemination of this information and data is achieved in various ways.

Preliminary earthquake reports and a summary of recent accelerograph records are presented on a regular basis in Seismic Engineering Program Reports, a USGS Circular. These summaries include a brief description of the earthquake and strong-motion recording station, the results of routine scalings of those records that contain peak accelerations greater than 0.05 g, and photographic reproductions of many of the more significant accelerograms. The program reports also contain abstracts of recent reports, notes on strong-motion information sources and the availability of digitized data, and other information pertinent to the USGS and other strong-motion programs.

Strong-motion event and strong-motion data reports are periodically published as USGS Open-file Reports and include the results of digitization and routine analyses of strong-motion accelerograms that contain peak accelerations greater than 0.10 g or are related to a specific event, particular strong-motion station, or geographic group of stations. The minimum acceleration level is based primarily on the current capability of USGS to process strong-motion records and may vary with both the degree of seismic activity and number of personnel available at any given time. Although maximum acceleration is not directly related to frequency content or duration of strong-motion, the peak acceleration can be readily obtained from an accelerogram, and thus the value is commonly used as a general indicator of the potential significance of the record. Detailed information on the availability of digitized data from various sources is published regularly in Seismic Engineering Program Reports.

The Strong-Motion Accelerograph Station List is periodically published as a USGS Open-file Report and includes information on all of the accelerograph stations in the western hemisphere known to the USGS. Because of the ever-changing nature of this information, it is impossible to have a complete list of all of the stations in existence at any one time. Rather, the list is intended to provide that community of persons interested in strong-motion programs with a reasonably complete indication of the current status of the various strong-motion networks. Information presented in this list includes the station name and geographic coordinates, site characteristics, type and size of structure, location of instruments, and the primary sources of data. The current list contains information on approximately 1,350 stations located in the United States, Canada, the Caribbean, and throughout Central and South America (Switzer and others, 1981).

Descriptions of strong-motion accelerograph records and the circumstances in which they were recorded are available to anyone involved in earthquake engineering through the computer based Strong-Motion Information Retrieval System (SMIRS). The system provides ready access to information about strong-motion records and the level of processing and analysis that has performed on them. Information about earthquakes that generated recorded motion is also provided. The information has been arranged into several data sets. The three major data sets are the record descriptions, the earthquake descriptions, and the recording site descriptions. Supplementary data sets include instructions and information about the data base, information about the recording instruments, and identification of organizations that own strong-motion instruments, that have additional information about the recording sites, or that archive the original or processed records.

Users may review the information free of charge with an ordinary phone line and a keyboard terminal. Instructions are available from the system so that a user needs to know only how to dial the computer and what to type to enter the retrieval system and begin using it. Once accessed, the system will offer a general introduction and will tell the user how to request more detailed instructions; also, the user will be given an oportunity to request a copy of the printed User's Manual (Converse, 1978).

Accelerograph Data

Table 12 is a summary of the 215 records recovered from USGS strong-motion stations during 1982,

just two fewer records than the yearly average for the period 1972 to 1981 inclusive. The recordings are largely from California, although Alaska, Arkansas, Hawaii, New Hampshire, Nevada, South Carolina, Utah, and Vermont also are represented. Additionally, many accelerograms were recovered from California in 1982 at stations operated by the California Division of Mines and Geology's Office of Strong-Motion Studies (OSMS). State legislation has given responsibility to OSMS for the dissemination of that organization's strong-motion data, which are no longer routinely listed in Strong-Motion Program Reports.

The earthquakes (table 12) are listed in chronological order and include date, time (UTC), general location, geographic coordinates, and magnitude. Information about the recording station consists of the name and location, owner, and geographic coordinates. Record data include S-wave minus trigger time and the orientation, maximum acceleration, and duration of strong-motion (greater than 0.10 g) for each instrument component. Record data are included only when one or more components recorded at least 0.05 g at ground stations or 0.10 g at upper floors of buildings. The event information has been compiled principally from the Preliminary Determination of Epicenters, published by the U.S. Geological Survey.

Table 12. *Summary of U. S. accelerograph records recovered during 1982*

Event	Station name (owner)[1]	Station coord.	TT[2], S-t (s)	Direction[3]	Max accl[4] (g)	Duration[5] (s)
19 January 1982 0014:42.0 UTC N. New England 43.5N, 71.6W Magnitude 4.5	New Hampshire Franklin Falls Dam (ACOE)†	43.447°N 71.660°W	* 0.8			
	Center crest			045° Up 315°	0.09 .10 .24	- 1-peak 0.3
	Right abutment			045° Up 315°	.28 .17 .52	.4 .3 1.3
	Downstream			225° Up 135°	.12 .20 .18	.3 1.1 .5
	Vermont White River Junc. Hosp. (VA)†	43.63° N 72.33° W	* *			
	Basement				**	
	Vermont North Hartland Dam (ACOE)†	43.604°N 72.361°W	* *			
	Crest				**	
	Abutment				**	
	Vermont Ball Mountain Dam (ACOE)†	43.12° N 72.78° W	* *			
	Crest				**	
	Abutment				**	
	Vermont North Springfield Dam (ACOE)†	43.338°N 72.511°W	* *			
	Crest				**	
	Downstream				**	
	Vermont Union Village Dam (ACOE)†	43.794°N 72.258°W	* *			
	Center crest				**	
	Left abutment				**	
	Downstream				**	
14 November 1979- 3 February 1982 Central California Epicenters and magnitudes unknown	Palo Alto City Hall 250 Hamilton Ave. (CPA/USGS)†	37.44° N 122.16° W	* *			
	Basement - level C				**	

Table 12. *Summary of U. S. accelerograph records recovered during 1982*--Continued

Event	Station name (owner)[1]	Station coord.	TT[2] S-t (s)	Direction[3]	Max accl[4] (g)	Duration[5] (s)
	Fourth floor				**	
	Ninth floor (roof)				**	
	Note: Two each additional records** recovered at basement, fourth floor, and ninth floor.					
4 February 1982 05?6:03 UTC Central California Epicenter and magnitude unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	3.75 0.8		**	
	Note: WWVB time incomplete					
14 February 1982 2204 UTC Central California Epicenter and magnitude unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	45.75 0.8		**	
24 June 1981- 24 February 1982 Central California Epicenter and magnitude unknown	Pleasant Valley Pumping Plant (USGS)†	36.308°N 120.249°W	* *			
	Switchyard				**	
	Maricopa Array Station 3 (CDWR)†	35.08° N 119.40° W	* *		**	
22 March 1982 0853:28.6 UTC Southern California 33.050N, 116.217W Magnitude 4.5	Borrego Springs Borrego Air Ranch (USGS)	33.19° N 116.28° W	32.1 1.8	315° Up 225°	.06 .03 .05	- - -
	Ocotillo Wells Burro Bend Cafe (USGS)†	33.14° N 116.13° W	* 1.8		**	
13 April 1982 1102:12.2 UTC Southern California 34.050N, 118.967W Magnitude 3.9	Malibu Kilpatrick Boys School (USGS)	34.093°N 118.836°W	17.68 *		**	
15 September 1981- 22 April 1982 Alaska Epicenter and magnitude unknown	Talkeetna FAA-VOR Building (USGS)†	62.30° N 150.10° W	* *		**	
	Note: Two additional records** recovered at Talkeetna.					
3 May 1982 1014:14.2 UTC SE Alaska 60.117N, 141.115W Magnitude 5.1	Icy Bay Guyot Hills (USGS)†	60.146°N 141.472°W	* *		**	
22 September 1981- 4 May 1982 Central California Epicenter and magnitude unknown	Central California SAGO East (UCB)†	36.81° N 121.41° W	* *	096° Up 006°	.19 .05 .16	1.1 - 1.2

Table 12. *Summary of U. S. accelerograph records recovered during 1982*--Continued

Event	Station name (owner)[1]	Station coord.	TT[2] S-t (s)	Direction[3]	Max accl[4] (g)	Duration[5] (s)
5 May 1982 1949:54.3 UTC So. Alaska 61.252N, 149.748W Magnitude 4.8	Anchorage Westward Hotel (USGS)†	61.220°N 149.892°W				
	Basement		* 6.7	135° Up 045°	.05 .02 .05	- - -
	Roof		* 7.0	135° Up 045°	.07 .12 .09	- 1-peak -
	Note: One additional unknown record** recovered at basement.					
	Anchorage USGS Building (USGS)†	61.223°N 149.892°W	* 6.6			
	Basement			360° Up 270°	.04 .01 .07	- - -
	Anchorage Gould Hall, APU (USGS)†	61.189°N 149.801°W	* 5.5			
	1st floor				**	
	Anchorage New Federal Building (USGS)†	61.216°N 149.883°W	* 6.6			
	Basement				**	
	Anchorage Alaska Hospital (USGS)†	61.21° N 149.82° W	* 6.3			
	1st floor				**	
	4th floor				**	
	7th floor				**	
4 September 1981- 6 May 1982 Central California Epicenter and magnitude unknown	Bear Valley Station 6 James Ranch (USGS)†	36.504°N 121.101°W	* *		**	
	Bear Valley Station 14 Upper Butts Ranch (USGS)†	36.569°N 121.043°W	* *		**	
28 September 1981- 6 May 1982 Central California Epicenter and magnitude unknown	Bear Valley Station 12 Williams Ranch (USGS)†	36.658°N 121.249°W	* *		**	
15 April 1982 1105:28 UTC Central California	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	28.25 0.7		**	

Table 12. *Summary of U. S. accelerograph records recovered during 1982*--Continued

Event	Station name (owner)[1]	Station coord.	TT[2] S-t (s)	Direction[3]	Max accl[4] (g)	Duration[5] (s)
Epicenters and magnitudes unknown	Note: One additional record** recovered at Station 10.					
16 September 1981-9 May 1982 Hawaii Epicenters and magnitudes unknown	Honokaa, Hawaii Fire Station (USGS)†	20.080°N 155.465°W	*	021°	.07	-
			*	Up	.07	-
				291°	.06	-
			*	021°	.05	-
			*	Up	.03	-
				291°	.08	-
	Note: Ten additional records** recovered at Honokaa.					
	Hawaii Nat'l Park, HI USGS Volcano Observ. (USGS)†	19.423°N 155.291°W	*	360°	.20	1.6
			0.4	Up	.11	2-peaks
				270°	.10	1-peak
	Note: Three additional records** recovered at Hawaii National Park.					
	Mauna Kea, Hawaii St. Park Visitors Ctr. (USGS)†	19.752°N 155.530°W	*		**	
			*			
	Note: Three additional records** recovered at Mauna Kea State Park.					
	Mauna Loa, Hawaii NOAA Observatory (USGS)†	19.539°N 155.580°W	*	030°	.08	-
			3.2	Up	.03	-
				300°	.09	-
	Note: Two additional records** recovered at Mauna Loa Observatory.					
	Kailua-Kona, Hawaii Fire Station (USGS)†	19.649°N 155.966°W	*		**	
			*			
	Waimea, Hawaii Fire Station (USGS)†	20.03° N 155.66° W	*		**	
			*			
	Note: One additional record** recovered at Waimea Fire Station.					
	Waiohinu, Hawaii K'au Baseyard (USGS)†	19.070°N 155.615°W	*	065°	.07	-
			1.9	Up	.04	-
				335°	.07	-
			*	065°	.08	-
			1.4	Up	.07	-
				335°	.08	-
	Note: One additional record** recovered at Waiohinu.					
	Kealakekua, Hawaii Kona Hospital (USGS)†	19.523°N 155.879°W	*		**	
			6.2			
	Note: Two additional records** recovered at Kealakekua.					
	Hilo, Hawaii US Fish & Wildlife (USGS)†	19.731°N 155.100°W	*	360°	.19	1.0
			*	Up	.04	-
				270°	.06	-

Table 12. *Summary of U. S. accelerograph records recovered during 1982*--Continued

Event	Station name (owner)[1]	Station coord.	TT[2] S-t (s)	Direction[3]	Max accl[4] (g)	Duration[5] (s)
	Pahala, Hawaii	19.20° N	*	188°	.58	3.0
	Kau Hospital	155.47° W	2.0	Up	.27	1.8
	(USGS)†			098°	.30	2.7
			*	188°	.24	4.0
			1.6	Up	.17	4.8
				098°	.34	2.7
			*	188°	.10	1-peak
			1.6	Up	.03	-
				098°	.11	1-peak
	Note: Two additional records** recovered at Pahala.					
11 May 1982	Bear Valley Station 12	36.658°N	32.15	310°	.09	-
2237:29.8 UTC	Williams Ranch	121.249°W	2.0	Up	.04	-
Central California	(USGS)			220°	.03	-
36.620N, 121.295W						
Magnitude 3.6						
20 May 1982	Bear Valley Station 12	36.658°N	22.65		**	
0129 UTC	Williams Ranch	121.249°W	1.5			
Central California	(USGS)					
Epicenter and						
magnitude unknown						
24 May 1982	Richfield, Utah	38.758°N	*		**	
1213:27.0 UTC	(USGS)†	112.086°W	1.0			
Utah						
38.706N, 112.041W						
Magnitude 4.0						
12 November 1980-	Whittier, Alaska	60.774°N	*		**	
13 June 1982	Begich Towers	148.686°W	*			
So. Alaska	(USGS)†					
Epicenter and						
magnitude unknown						
15 June 1982	Skinner Dam	33.58° N	*			
2349:21.3 UTC	Murrieta Hot Springs	117.07° W	4.4			
Southern California	(MWD)†					
33.550N, 116.667W						
Magnitude 4.8	Abutment			178°	.05	-
				Up	.03	-
				088°	.05	-
	Thousand Palms	33.82° N	*		**	
	Post Office	116.40° W	4.3			
	(USGS)†					
	Rancho de Anza	33.35° N	*	135°	.04	-
	(USGS)†	116.40° W	*	Up	.03	-
				045°	.06	-
	Terwilliger Valley	33.48° N	24.40	135°	.11	1-peak
	Snodgrass Residence	116.59° W	1.6	Up	.04	-
	(USGS)			045°	.09	-
	North Palm Springs	33.92° N	*		**	
	Post Office	166.54° W	5.6			
	(USGS)†					

Table 12. *Summary of U. S. accelerograph records recovered during 1982*--Continued

Event	Station name (owner)[1]	Station coord.	TT[2] S-t (s)	Direction[3]	Max accl[4] (g)	Duration[5] (s)
	Hurkey Creek Park (USGS)†	33.67° N 116.68° W	* 1.5	135° Up 045°	.06 .03 .08	- - -
	Cranston Forest Stn. (USGS)†	33.74° N 116.84° W	* 3.4	135° Up 045°	.06 .03 .04	- - -
	Collins Valley (USGS)†	33.42° N 116.47° W	* 2.9		**	
	Anza Fire Station (USGS)†	33.556°N 116.673°W	* 1.2	315° Up 225°	.14 .08 .13	1.2 - 0.3
	Pinyon Flats Observ. (USGS)	33.61° N 116.46° W	25.80 2.4	135° Up 045°	.04 .04 .05	- - -
19 June 1982 1017:33.6 UTC Central California 36.530N, 121.073W Magnitude 4.0	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	36.25 1.9		**	
	Bear Valley Station 1 Fire Station (USGS)†	36.573°N 121.184°W	* 0.6		**	
	Bear Valley Station 11 Wilkinson Ranch (USGS)	36.608°N 121.109°W	39.65 *		**	
	Bear Valley Station 6 James Ranch (USGS)	36.504°N 121.101°W	36.52 1.1		**	
	Bear Valley Station 14 Upper Butts Ranch (USGS)	36.569°N 121.043°W	38.08 *		**	
20 June 1982 0457 UTC Central California Epicenter and magnitude unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	16.0 0.7		**	
	Bear Valley Station 1 Fire Station (USGS)†	36.573°N 121.184°W	* *		**	
12 January 1982-22 June 1982 South Carolina Epicenters and magnitudes unknown	Monticello Dam (USGS)†	34.304°N 81.333°W	* *			
	Shared abutment (Center crest)				**	
	Downstream			180° Up 090°	.08 .14 .11	- 1-peak 1-peak

Note: Two additional records** recovered at shared abutment.

Table 12. *Summary of U. S. accelerograph records recovered during 1982*--Continued

Event	Station name (owner)[1]	Station coord.	TT[2] S-t (s)	Direction[3]	Max accl[4] (g)	Duration[5] (s)
5 July 1982 0413:49.7 UTC Arkansas 35.20N, 92.25W Magnitude 3.8	Enola, Arkansas (USGS/TEIC)†	35.185°N 92.232°W	* *	360° Up 270°	.19 .07 .57	0.9 - 1.7
5 July 1982 0902:37.1 UTC Central California 36.667N, 121.357W Magnitude 3.2	Bear Valley Station 12 Williams Ranch (USGS)	36.658°N 121.249°W	39.70 *		**	
20 March 1981- 6 August 1982 Nevada Epicenter and magnitude unknown	Mina, Nevada (USGS)†	38.434°N 118.154°W	* *		**	
7 August 1982 0837:25.8 UTC Southeast Alaska 60.212N, 139.540W Magnitude 4.7	Yakutat Bay Bancas Point (USGS)	59.953°N 139.635°W	33.48 *		**	
10 August 1982 0211:29.6 UTC Central California 36.597N, 121.242W Magnitude 4.5	Bear Valley Station 12 Williams Ranch (USGS)	36.658°N 121.249°W	32.62 2.5	310° Up 220°	.19 .08 .12	0.5 - 0.2
	Bear Valley Station 11 Wilkinson Ranch (USGS)	36.608°N 121.109°W	32.65 *		**	
	Bear Valley Station 2 Stone Canyon West (USGS)	36.636°N 121.234°W	32.85 *		**	
	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	32.50 1.6		**	
	Bear Valley Station 1 Fire Station (USGS)†	36.573°N 121.184°W	* 1.1	310° Up 220°	.09 .04 .10	- - 1-peak
	Bear Valley Station 14 Upper Butts Ranch (USGS)†	36.569°N 121.043°W	* *		**	
10 August 1982 0211:43 UTC (approx) Central California Epicenter and magnitude unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	46.4 *		**	
	Bear Valley Station 1 Fire Station (USGS)†	36.573°N 121.184°W	* *		**	
10 August 1982 0212:08 UTC (approx) Central California Epicenter and	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	11.5 (2.0)		**	

Table 12. *Summary of U. S. accelerograph records recovered during 1982*--Continued

Event	Station name (owner)[1]	Station coord.	TT[2] S-t (s)	Direction[3]	Max accl[4] (g)	Duration[5] (s)
magnitude unknown	Bear Valley Station 12 Williams Ranch (USGS)†	36.658°N 121.249°W	* (2.3)		**	
	Bear Valley Station 11 Wilkinson Ranch (USGS)	36.608°N 121.109°W	11.65 (2.5)		**	
	Bear Valley Station 1 Fire Station (USGS)†	36.573°N 121.184°W	* (1.2)	310° Up 220°	.11 .04 .15	1-peak - 0.3
10 August 1982 0212:20 UTC (approx) Central California Epicenter and magnitude unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	23.5 (1.9)		**	
	Bear Valley Station 11 Wilkinson Ranch (USGS)	36.608°N 121.109°W	23.80 *		**	
	Bear Valley Station 1 Fire Station (USGS)†	36.573°N 121.184°W	* (1.2)		**	
10 August 1982 0212:28 UTC (approx) Central California Epicenter and magnitude unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	31.2 (1.9)		**	
	Bear Valley Station 11 Wilkinson Ranch (USGS)	36.608°N 121.109°W	31.45 *		**	
	Bear Valley Station 1 Fire Station (USGS)†	36.573°N 121.184°W	* *		**	
10 August 1982 0224:00.3 UTC Central California 36.598N, 121.258W Magnitude 3.5	Bear Valley Station 12 Williams Ranch (USGS)	36.658°N 121.249°W	2.80 2.2		**	
10 August 1982 0229 UTC Central California Epicenter and magnitude unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	12.25 *		**	
	Bear Valley Station 1 Fire Station (USGS)†	36.573°N 121.184°W	* *		**	
10 August 1982 1837:04.2 UTC So. California 32.917N, 115.533W Magnitude 3.6	El Centro Array Sta. 6 551 Huston Rd. (USGS)	32.839°N 115.487°W	07.2 3.2	230° Up 140°	.09 .02 .07	- - -
11 August 1982 0746:43.2 UTC Central California 36.638N, 121.308W	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	47.08 2.8	310° Up 220°	.13 .07 .14	1.3 - 1.7

Table 12. *Summary of U. S. accelerograph records recovered during 1982*--Continued

Event	Station name (owner)[1]	Station coord.	TT[2] S-t (s)	Direction[3]	Max accl[4] (g)	Duration[5] (s)
Magnitude 4.6	Bear Valley Station 6 James Ranch (USGS)	36.504°N 121.101°W	49.58 2.0		**	
	Bear Valley Station 12 Williams Ranch (USGS)	36.658°N 121.249°W	46.15 1.9	310° Up 220°	.11 .06 .08	1-peak - -
	Bear Valley Station 14 Upper Butts Ranch (USGS)	36.569°N 121.043°W	48.45 3.7	310° Up 220°	.13 .12 .15	2-peaks 2-peaks 1.0
	Bear Valley Station 11 Wilkinson Ranch (USGS)	36.608°N 121.109°W	47.15 3.0	130° Up 040°	.16 .09 .14	2-peaks - 1-peak
	Bear Valley Station 1 Fire Station (USGS)†	36.573°N 121.184°W	* 1.9	310° Up 220°	.16 .07 .27	0.5 - 0.4
	Bear Valley Station 7 Pinnacles Nat'l Mon. (USGS)	36.483°N 121.180°W	49.42 0.2	310° Up 220°	.04 .04 .09	- - -
	Bear Valley Station 2 Stone Canyon West (USGS)	36.636°N 121.234°W	47.55 *		**	
	Hollister City Hall 339 Fifth Street (USGS) Digital	36.85° N 121.40° W	48.93 *		**	
12 August 1982 0653:05.8 UTC Central California 36.628N, 121.300W Magnitude 3.4	Bear Valley Station 11 Wilkinson Ranch (USGS)	36.608°N 121.109°W	9.62 *		**	
4 May 1982- 16 August 1982 Central California Epicenter and magnitude unknown	Hollister City Hall Annex (USGS)† Basement	36.85° N 121.40° W	* *		 **	
25 August 1982 1505:17.8 UTC SE Alaska 60.204N, 139.512W Magnitude 5.1	Yakutat Bay Bancas Point (USGS)	59.953°N 139.635°W	25.26 *	360° Up 270°	.09 .01 .01	- - -
25 August 1982 1750 UTC Central California Epicenter and magnitude unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	28.9 1.8		**	
31 August 1982 0311:07.8 UTC Central California 36.648N, 121.325W	Bear Valley Station 5 Callens Ranch (USGS)	36.673°N 121.195°W	11.25 1.9		**	

Table 12. *Summary of U. S. accelerograph records recovered during 1982*--Continued

Event	Station name (owner)[1]	Station coord.	TT[2] S-t (s)	Direction[3]	Max accl[4] (g)	Duration[5] (s)
Magnitude 4.0	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	11.98 *		**	
	Bear Valley Station 12 Williams Ranch (USGS)	36.658°N 121.249°W	10.34 1.9	310° Up 220°	.10 .03 .06	1-peak - -
15 March 1982- 3 September 1982 Central California Epicenter and magnitude unknown	Palo Alto VA Hospital Bldg 1 (VA)†	37.40° N 122.14° W	* *			
	Basement				**	
	Roof				**	
5 September 1982 0521:26.6 UTC So. California 32.933N, 115.850W Magnitude 4.4	Superstition Mountain Camera Site (USGS)	32.955°N 115.823°W	27.75 1.0	135° Up 045°	.16 .12 .07	0.8 1-peak -
6 September 1982 1512:09.6 UTC So. California 32.933N, 115.850W Magnitude 3.3	Superstition Mountain Camera Site (USGS)	32.955°N 115.823°W	11.55 *	135° Up 045°	.07 .03 .03	- - -
8 September 1982 1154:57.9 UTC Central California 36.67N, 121.29W Magnitude 3.3	Bear Valley Station 12 Williams Ranch (USGS)	36.658°N 121.249°W	0.9 2.0		**	
8 September 1982 1211:37.4 UTC Central California 36.653N, 121.298W Magnitude 3.4	Bear Valley Station 12 Williams Ranch (USGS)	36.658°N 121.249°W	40.6 2.1		**	
11 April 1982- 23 September 1982 Alaska Epicenter and magnitude unknown	Talkeetna FAA VOR Building (USGS)†	62.30° N 150.10° W	* *		**	
9 September 1982- 23 September 1982 Central California Epicenter and magnitude unknown	Bear Valley Station 12 Williams Ranch (USGS)†	36.658°N 121.249°W	* 1.7	310° Up 220°	.06 .02 .03	- - -
24 September 1982 0805:55.4 UTC Central California 36.728N, 121.335W Magnitude 3.9	Bear Valley Station 12 Williams Ranch (USGS)	36.658°N 121.249°W	57.9 2.1	310° Up 220°	.09 .03 .06	- - -
	Bear Valley Station 5 Callens Ranch (USGS)	36.673°N 121.195°W	59.8 *		**	

Table 12. *Summary of U. S. accelerograph records recovered during 1982*--Continued

Event	Station name (owner)[1]	Station coord.	TT[2] S-t (s)	Direction[3]	Max accl[4] (g)	Duration[5] (s)
25 September 1982 0420:04.8 UTC Central California 36.673N, 121.330W Magnitude 3.9	Bear Valley Station 12 Williams Ranch (USGS)	36.658°N 121.249°W	7.6 *		**	
25 September 1982 0424 UTC Central California Epicenter and magnitude unknown	Bear Valley Station 12 Williams Ranch (USGS)	36.658°N 121.249°W	51.0 2.0		**	
25 September 1982 0425 - 2100 UTC Central California Epicenter and magnitude unknown	Bear Valley Station 12 Williams Ranch (USGS)†	36.658°N 121.249°W	* 2.4		**	
25 September 1982 2101:22.3 UTC Central California 36.658N, 121.337W Magnitude 3.2	Bear Valley Station 12 Williams Ranch (USGS)	36.658°N 121.249°W	24.9 2.2		**	
22 October 1982 0059 UTC Central California Epicenter and magnitude unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532°N 121.143°W	3.59 1.7		**	
24 October 1982 1834:45.8 UTC Central California 36.640N, 121.240W Magnitude 3.0	Bear Valley Station 10 Webb Residence (USGS)	36.352°N 121.143°W	49.85 2.4		**	
25 October 1982 2226:04.4 UTC Coalinga California 36.322N, 120.508W Magnitude 5.4	Pleasant Valley Pumping Plant (USBR)†	36.308° N 120.249° W				
	Basement		* 3.5	135° Up 045°	.06 .03 .08	- - -
	1st floor		* 3.5	135° Up 045°	.07 .03 .09	- - -
	Switchyard		* 0.7	225° Up 135°	.09 .05 .11	- - 1-peak
	Note: One additional unknown record** recovered at switchyard.					
	Bear Valley Station 6 James Ranch (USGS)	36.504°N 121.101°W	25.7 *		**	
	Terminus Dam (ACOE)†	36.42° N 119.00° W	* *			

Table 12. *Summary of U. S. accelerograph records recovered during 1982*--Continued

Event	Station name (owner)[1]	Station coord.	TT[2] S-t (s)	Direction[3]	Max accl[4] (g)	Duration[5] (s)
	Main crest				**	
	Auxiliary crest				**	
	Lake Success Dam (ACOE)†	36.062°N 118.924°W	* *			
	Left abutment				**	
	Right abutment				**	
	Downstream				**	
	Slope				**	
	Right crest				**	
	Left crest				**	
10 November 1982 1121:25.7 UTC So. California 34.050N, 116.667W Magnitude 3.9	Forest Falls Post Office (USGS)†	34.09° N 116.92° W	* *		**	
	Morongo Valley Fire Station (USGS)	34.05° N 116.58° W	27.92 1.8		**	
	Note: Two additional unknown records** recovered at Morongo Valley Fire Station.					
	Cabazon Post Office (USGS)	33.92° N 116.78° W	32.00 *		**	
	Whitewater Canyon Trout Farm (USGS)†	33.99° N 116.66° W	* *		**	
	Note: One additional unknown record** recovered at Whitewater Canyon Trout Farm.					
15 November 1982 0258:22.9 UTC South Dakota 43.007N, 97.850W Magnitude 4.3	South Dakota Gavins Point Dam (ACOE)†	42.846°N 97.482°W	* 4.1			
	Crest				**	
	Downstream				**	
23 March 1982- 21 November 1982 So. California Epicenter and magnitude unknown	Imperial Valley Plaster City (USGS)†	32.79° N 115.86° W	* 2.6		**	
28 January 1981- 29 November 1982 So. California Epicenters and magnitudes unknown	Los Angeles 2029 Century Park E. (CLA)†	34.060°N 118.413°W	* *			
	30th floor				**	

Table 12. *Summary of U. S. accelerograph records recovered during 1982*--Continued

Event	Station name (owner)[1]	Station coord.	TT[2] S-t (s)	Direction[3]	Max accl[4] (g)	Duration[5] (s)
	43rd floor				**	
	Note: Two each additional records** at 30th and 43rd floors.					
28 April 1982- 8 December 1982 Central California Epicenter and magnitude unknown	New Melones Dam (USBR)†	37.949°N 120.524°W	* *			
	Downstream				**	
	Left Crest				**	
	Left abutment				**	
	Middam (slope)				**	
	Right abutment				**	
	Center crest				**	
29 April 1982- 10 December 1982 So. Nevada Epicenter and magnitude unknown	Hoover Dam, Nevada (USBR)†	36.02° N 114.74° W	* *			
	Intake tower			315° Up 225°	.07 .05 .13	- - 1-peak
	Gallery				**	
	Right abutment				**	
8 June 1982- 15 December 1982 Central California Epicenter and magnitude unknown	Diemer Filter Plant (MWD)†	33.91° N 117.82° W	* 1.1			
	Basement				**	
	Reservoir roof				**	
16 December 1982 0653:01.3 UTC Northern California 40.372N, 124.055W Magnitude 4.6	College of the Redwoods Eel River Valley Array (USGS)†	40.699°N 124.200°W	* 4.3		**	
	Fortuna Fire Station Eel River Valley Array (USGS)†	40.599°N 124.154°W	* 3.2	360° Up 270°	.28 .04 .23	1.6 - 1.2
	Bunker Hill FAA Eel River Valley Array (USGS)	40.498°N 124.294°W	05.25 3.1	360° Up 270°	.04 .03 .12	- - 1-peak
	Centerville Beach Eel River Valley Array (USGS)†	40.563°N 124.348°W	* 4.0	360° Up 270°	.09 .03 .11	- - 1-peak
25 September 1982- 30 December 1982 Central California Epicenter and magnitude unknown	Bear Valley Station 12 Williams Ranch (USGS)†	36.658°N 121.249°W	* 2.6		**	
	Note: May be related to event of October 25, 2226:04.4 UTC.					
30 December 1982 2319 UTC	Bear Valley Station 12 Williams Ranch	36.658°N 121.249°W	30.54 1.6	310° Up	.09 .02	- -

Table 12. *Summary of U. S. accelerograph records recovered during 1982*--Continued

Event	Station name (owner)[1]	Station coord.	TT[2] S-t (s)	Direction[3]	Max accl[4] (g)	Duration[5] (s)
Central California Epicenter and magnitude unknown	(USGS)			220°	.03	-

[1]Station owner code:
ACOE - U.S. Army Corps of Engineers.
CDWR - California Department of Water Resources.
CPA - City of Palo Alto.
CLA - City of Los Angeles.
MWD - Metropolitan Water District of Southern California.
TEIC - Tennessee Earthquake Information Center.
UCB - University of California, Berkeley.
USBR - U.S. Bureau of Reclamation.
USGS - U.S. Geological Survey.
VA - Veterans Administration.
† - WWVB time code not legible or instrument not equipped with a radio receiver; correlation of accelerogram with event may be questionable.

[2] TT - Trigger time of accelerograph (in seconds, after minute (or following minute) listed in event column).
S-t - S-wave arrival minus trigger time (S - t) interval (S-P times given in parentheses).
* TT and/or S-t time is questionable or cannot be determined.

[3]Direction of case acceleration for upward trace deflection on accelerogram. Horizontal components are listed as azimuth in degrees clockwise from north. Vertical components are listed as "Up" or "Down."

[4]Peak acceleration recorded at ground level on one vertical and two orthogonal horizontal components unless otherwise noted.
** Denotes maximum acceleration is less than 0.05 g at ground level or less than 0.10 g at non ground-level stations.

[5]Duration between first and last peaks of acceleration greater than 0.10 g.

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