GEOLOGICAL SURVEY CIRCULAR 723-D

Earthquakes in the United States, October–December 1974

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By C. W. Stover, R. B. Simon, and W. J. Person

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INTRODUCTION

The earthquake information in this publication supplements that contained in the NEIS (National Earthquake Information Service) publications, PDE ("Preliminary Determination of Epicenters") and "Preliminary Determination of Epicenters, Monthly Listing," to the extent of providing detailed felt and intensity data, as well as isoseismal maps for U.S. earthquakes. The purpose is to provide a complete listing of macroseismic effects of earthquakes, which can be used in risk studies, nuclear power plant site evaluations, seismicity studies, and answering inquiries by the public.

This publication contains two major sections. The first (table 1) is a tabular listing of earthquakes in chronological order by State, consisting of the following basic information: date, origin time, hypocenter, magnitude, maximum intensity, and the computational source of the hypocenter. The second section consists of two maps and table 2, which lists detailed intensity information. The list of earthquakes in table 1 was compiled from those located in the United States or off the coasts that were published in the PDE; from hypocenters in California above magnitude 3.5, supplied by California Institute of Technology, Pasadena, and the University of California at Berkeley; and from any others that were felt or that caused damage, regardless of magnitude or availability of a hypocenter. Known or suspected explosions are also listed.

The intensities and macroseismic data were compiled from information obtained through questionnaires (fig. 1) sent to post offices in the epicentral area, from newspaper articles, and with the cooperation of other government agencies, State institutions, local organizations, and individuals. (See "Acknowledgments" for a list of collaborators.) Anyone wishing to submit felt or damage information on earthquakes for inclusion in future reports should send it to the National Earthquake Information Service, Stop 967, Box 25046, Denver Federal Center, Denver, Colo. 80225. Copies of the "Earthquake Report" questionnaire can be obtained at this address.

The primary method used by the NEIS to collect macroseismic information was a questionnaire canvass using the "Earthquake Report" forms, which were mailed to postmasters in the area affected by the earthquake. The postmasters completed the forms and returned them to the NEIS, where they were evaluated and an intensity value was assigned. Using these values, isoseismal lines were drawn on maps to separate regions characterized by a group of one or more ranges of intensity. Any isoseismal line may include a lower or higher intensity if it falls among a set of the values being contoured and cannot be differentiated except as an isolated point. Anomalous intensities located some distances from the contiguous data may not be enclosed within the isoseismal lines. These intensities are not considered when calculating the felt area.

These data will be included in the "Earthquake Description" section of "United States Earthquakes," an annual publication, to which later data from other sources may be added for the purposes of updating and completeness. "United States Earthquakes" is published jointly by the U.S. Geological Survey, Department of the Interior, and the Environmental Data Service, NOAA, Department of Commerce.

U.S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
EARTHQUAKE REPORT

Form Approved
OMB No. 41-R0013

1 An earthquake was felt ☐ not felt ☐

Time _____ A.M.

Date of shock _____

_____ P.M.

If felt, please supply information below *(Underline appropriate words or fill spaces.)*
If not felt, please sign and return card, which requires no postage.

2. YOUR LOCATION DURING EARTHQUAKE

a. City, County, State _____

Township, Range, Section, Quarter Section, or Geographic Coordinates _____

b. **Ground:**
Rocky, gravelly, loose, compact, marshy, filled in, or _____
Level, sloping, steep, or _____

c. **If inside, type of construction:**
Wood, brick, stone, or _____

d. **Quality of construction:**
New, old, well built, poorly built, or _____

e. **No. of floors in building:**

f. **Observer's floor:**

g. **Activity when earthquake occurred:**
Walking, sitting, lying down, sleeping

h. **If outside, you, others were:**
Quiet, active

3. EFFECTS ON POPULATION

a. **Felt by:**
No one, very few, several, many, all (in your home) (in community)

b. **Awakened:**
No one, few, many, all (in your home) (in community)

c. **Frightened:**
No one, few, many, all (in your home) (in community); general panic

4. RELATED SOUNDS

a. **Rattling of windows, doors, dishes, etc.** _____

b. **Creaking of building** (Describe) _____

c. **Earth noises:** Faint, moderate, loud _____

5. PHYSICAL EFFECTS AND DAMAGE

a. **Outside:**

(1) Trees and bushes shaken, vehicles rocked, etc. _____
(2) Ground cracked; landslides; water disturbed, etc. _____
(3) Chimneys, tombstones, elevated water tanks, etc., cracked, twisted, overturned _____
(4) Other effects _____

b. **Buildings:**

(1) Hanging objects swung moderately, violently. Direction _____
(2) Small objects shifted, overturned, fell _____
(3) Furniture shifted, overturned, broken _____
(4) Plaster cracked, broken, fell _____
(5) Windows cracked _____
(6) Structural elements of brick, wood, or _____
Damage: None, slight, moderate, great _____

Signature and address of observer

Additional information would be appreciated. Use space on reverse side.

FIGURE 1.—Example of the "Earthquake Report" form used for evaluating the intensities of earthquakes.

DISCUSSION OF TABLES

The parameters for the earthquakes in table 1 and table 2 include the date, origin time, hypocenter (epicenter and focal depth), magnitude, intensity, and hypocenter source. The origin time and date are listed in Universal Coordinated Time (UTC) and local standard or daylight-saving time based on the time-zone maps in figures 2 and 3. The epicenters, which were taken from those published in the PDE, are listed here to two or three decimal places. 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 decimal places listed. The epicenters located by the NEIS have a varying degree of accuracy, usually two-tenths of a degree or less, depending on their continental or oceanic location. The oceanic hypocenters are less accurate than those on the continent, even though both are listed to two decimal places.

Figures 4–6 are maps summarizing the earthquake activity for the conterminous United States, Alaska, and Hawaii for the periods October–December 1974. The annual summaries are shown in figures 7–9. The magnitudes plotted in these figures are based on M_L or m_{bLg}, if neither was computed, then on M_S, and finally on m_b, when it was the only magnitude computed.

The magnitude values listed in tables 1 and 2 were furnished to the PDE by cooperating institutions or determined by the NEIS. The computational sources are labled according to the assigned letter codes shown in headnotes to tables 1 and 2; the letter follows the value listed under the column heading "Magnitude." In table 1 the absence of a letter code indicates that NEIS is the source. In table 2 the magnitude source is the same as the location source unless indicated otherwise, by an alphabetic character to the right of the magnitude value. The magnitude values calculated by the NEIS are based on the following formulas:

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

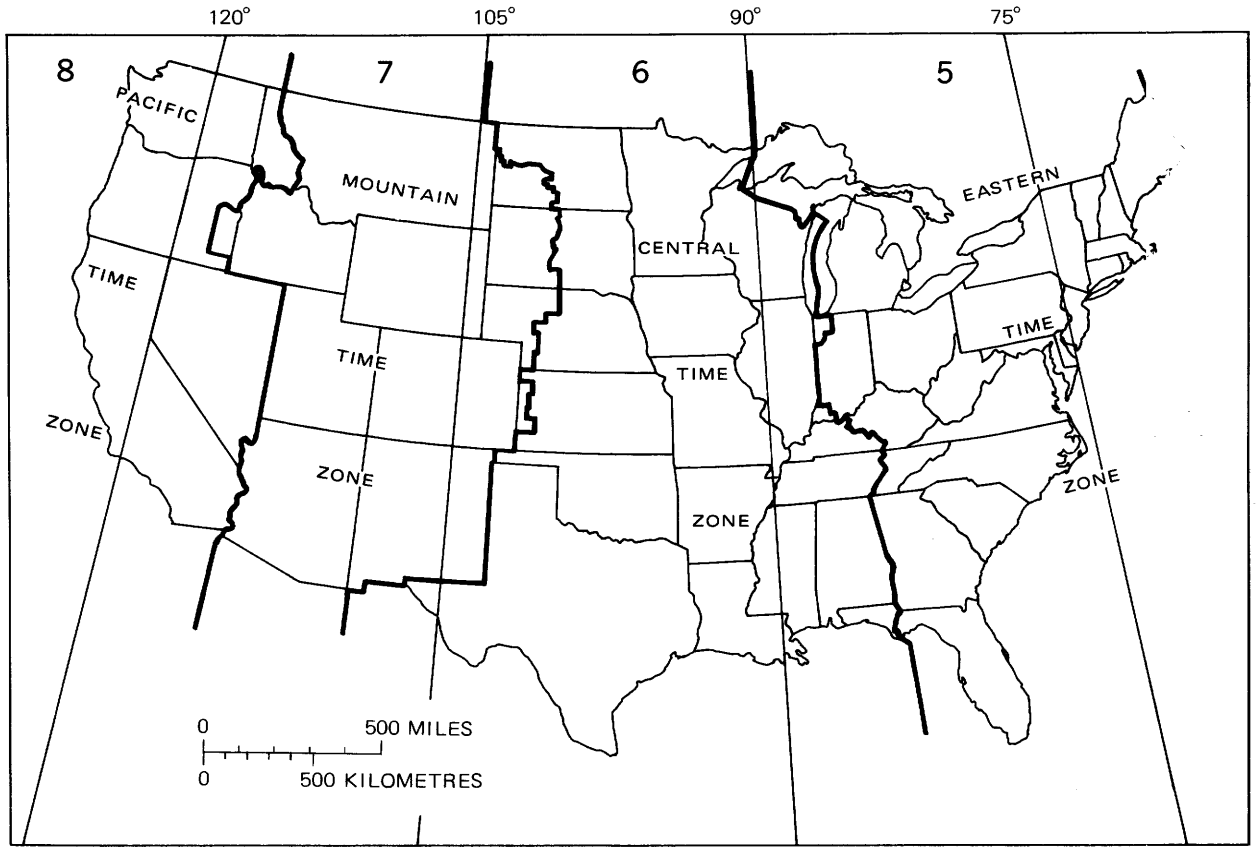

FIGURE 2.—Standard time zones of the conterminous United States. The number in each zone shows the number of hours to be subtracted from Universal Coordinated Time to convert to local standard time. (Subtract 1 hour less for local daylight-saving time.)

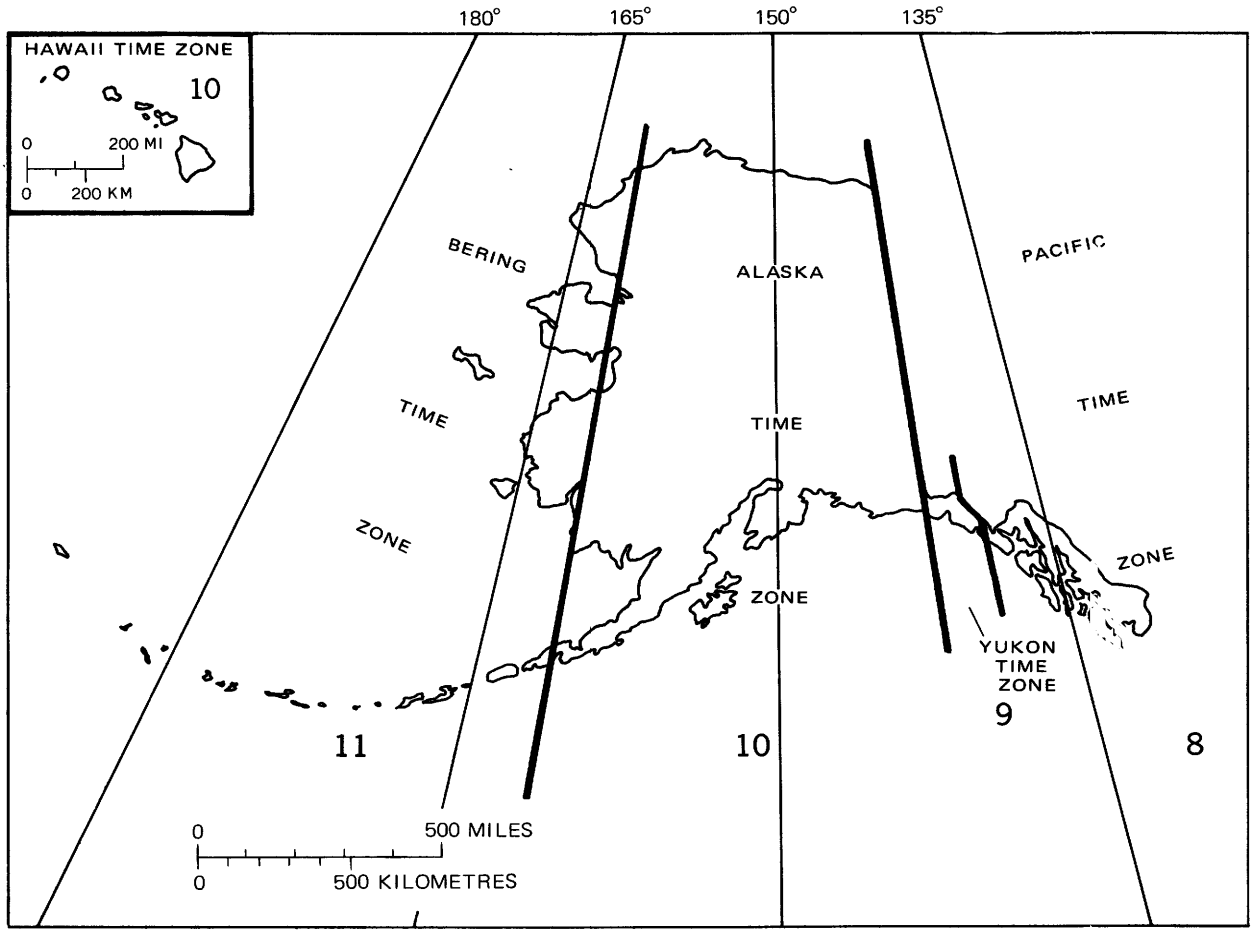

FIGURE 3.—Standard time zones of Alaska and Hawaii. The number in each zone shows the number of hours to be subtracted from Universal Coordinated Time to convert to local standard time. (Subtract 1 hour less for local daylight-saving time.)

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 horizontal surface-wave ground amplitude, in micrometres; T is the period, in seconds; and $18 \leq T \leq 22$, and D is the distance, in geocentric degrees (station to epicenter), and $20° \leq D \leq 160°$. No depth correction is made for depths less than 50 km.

$$m_b = \log (A/T) + Q (D, h), \qquad (2)$$

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 micrometres, is not necessarily the maximum of the P-wave group. Q is a function of distance D and depth h, where $D \leq 5°$.

$$M_L = \log A - \log A_0, \qquad (3)$$

as defined by Richter (1958, p. 340), where A is the maximum trace amplitude, in millimetres, 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. M_L values are also calculated from other seismometers by conversion of recorded ground motion to the expected response of the torsion seismometer.

$$m_{bLg} = 3.75 + 0.90 (\log D) + \log (A/T) \quad 0.5° \leq D \leq 4°,$$

$$m_{bLg} = 3.30 + 1.66 (\log D) + \log (A/T) \quad 4° \leq D \leq 30°, \qquad (4)$$

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

All of the intensity values (indicated by Roman numerals) listed in this summary were derived, using the Modified Mercalli Intensity Scale of 1931

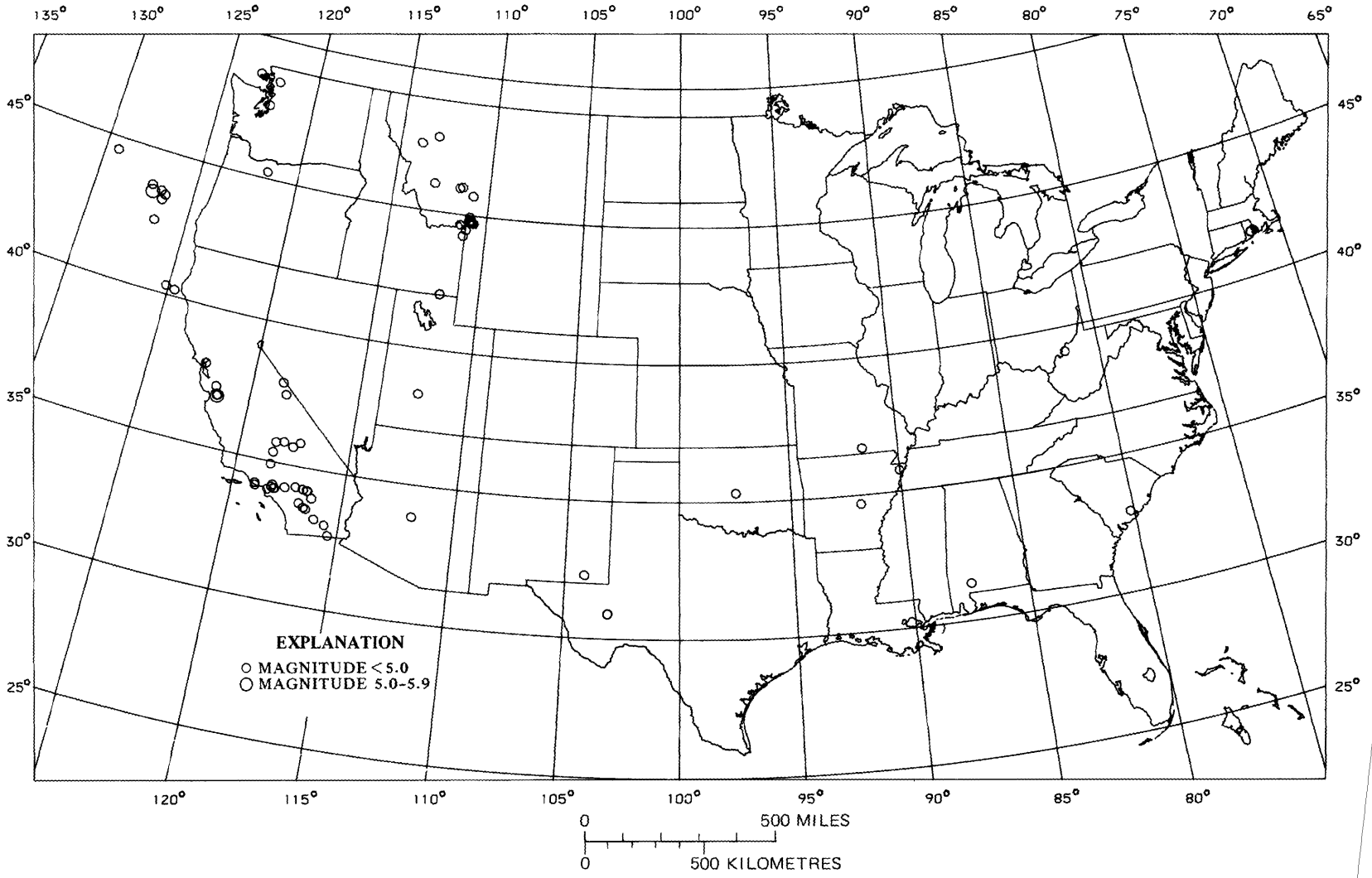

FIGURE 4.—Earthquake epicenters in the conterminous United States for October-December 1974, plotted from table 1.

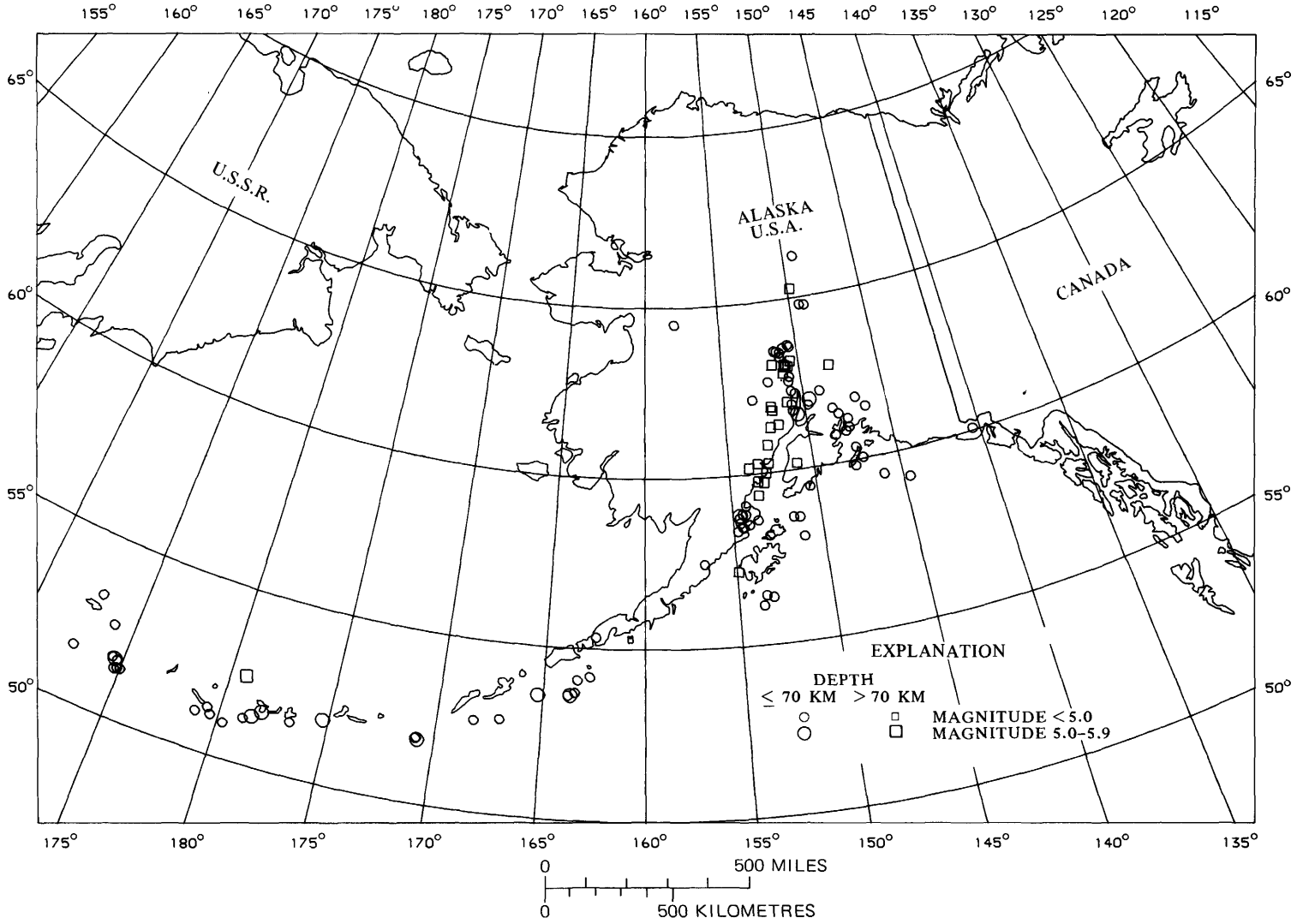

FIGURE 5.—Earthquake epicenters in Alaska for October-December 1974, plotted from table 1.

TABLE 1.—*Summary of United States earthquakes for October-December 1974*

[Sources of the hypocenter and magnitudes: (B) University of California at Berkeley; (C) University of Connecticut, Groton; (G) U.S. Geological Survey, National Earthquake Information Service; (H) U.S. Geological Survey, Hawaiian Volcano Observatory; (M) NOAA, Palmer Observatory, Alaska; (P) California Institute of Technology, Pasadena; (S) St. Louis University, St. Louis, Missouri; (U) University of Utah, Salt Lake City; (T) University of Oklahoma, Leonard; (V) Virginia Polytechnic Institute and State University, Blacksburg; (W) University of Washington, Seattle. N, normal depth; UTC, Universal Coordinated Time. For names of local time zones, see figures 2 and 3. Leaders (. . .) indicate no information available]

Date (1974)	Origin time (UTC) hr min s	Lat	Long	Depth (km)	Magnitude m_b	Magnitude M_S	Magnitude M_L or m_{bLg}	Maximum intensity	Hypocenter source	Local time date	Local time hour
Alabama											
Dec. 10	06 01 32.7	31.35 N.	87.47 W.	10	...	...	3.0S	V	G	Dec. 10	12 a.m. CST
Alaska											
Oct. 4	00 43 22.3	60.98 N.	147.52 W.	52	3.5	...	...	...	G	Oct. 3	03 p.m. ADT
Oct. 4	05 15 51.5	63.02 N.	150.71 W.	170	...	...	...	...	G	Oct. 3	08 p.m. ADT
Oct. 4	05 34 43.9	63.04 N.	150.98 W.	149	3.6	...	...	...	G	Oct. 3	08 p.m. ADT
Oct. 5	00 53 43.3	63.17 N.	150.53 W.	115	...	...	...	...	G	Oct. 4	03 p.m. ADT
Oct. 5	22 34 32.1	58.16 N.	153.01 W.	66	4.4	...	...	...	G	Oct. 5	01 p.m. ADT
Oct. 6	13 37 43.7	60.26 N.	152.65 W.	98	4.0	...	...	...	G	Oct. 6	04 a.m. ADT
Oct. 6	18 08 58.2	63.13 N.	151.75 W.	194	...	...	...	...	G	Oct. 6	09 a.m. ADT
Oct. 9	06 13 35.5	60.00 N.	152.86 W.	146	...	...	...	...	G	Oct. 8	09 p.m. ADT
Oct. 9	06 00 04.7	Near Fairbanks		...	...	...	...	IV	...	Oct. 9	09 p.m. ADT
Oct. 10	01 19 14.1	62.00 N.	151.09 W.	86	...	...	...	...	G	Oct. 9	04 p.m. ADT
Oct. 11	04 09 47.6	59.74 N.	153.02 W.	146	...	...	...	...	G	Oct. 10	07 p.m. ADT
Oct. 11	10 30 40.2	60.37 N.	147.37 W.	18	3.5	...	3.4M	...	G	Oct. 11	01 a.m. ADT
Oct. 12	12 33 24.9	56.14 N.	153.72 W.	10	4.8	4.8	...	...	G	Oct. 12	03 a.m. ADT
Oct. 12	19 29 01.0	60.83 N.	148.40 W.	4	...	...	2.7M	...	G	Oct. 12	10 a.m. ADT
Oct. 13	15 26 14.4	61.43 N.	148.01 W.	51	...	...	...	...	G	Oct. 13	06 a.m. ADT
Oct. 14	01 20	Near Fairbanks		...	...	...	...	IV	...	Oct. 13	04 p.m. ADT
Oct. 15	15 42 27.9	63.05 N.	150.89 W.	127	3.5	...	...	...	G	Oct. 15	06 a.m. ADT
Oct. 15	18 16 12.8	57.16 N.	154.95 W.	90	...	...	...	...	G	Oct. 15	09 a.m. ADT
Oct. 15	21 32 41.5	62.88 N.	148.11 W.	93	3.7	...	...	...	G	Oct. 15	12 p.m. ADT
Oct. 16	11 18 23.5	63.56 N.	150.92 W.	18	3.4	...	3.9M	...	G	Oct. 16	02 a.m. ADT
Oct. 17	12 05 54.4	59.19 N.	144.66 W.	38	3.4	...	3.5M	...	G	Oct. 17	03 a.m. ADT
Oct. 18	14 02 33.8	53.63 N.	163.80 W.	42	4.7	...	...	...	G	Oct. 18	04 a.m. BDT
Oct. 21	13 28 44.1	51.32 N.	179.42 E.	65	4.4	...	...	...	G	Oct. 21	03 a.m. BDT
Oct. 21	17 09 17.0	63.58 N.	150.48 W.	N	...	...	2.9M	...	G	Oct. 21	08 a.m. ADT
Oct. 22	02 57 59.0	62.71 N.	150.73 W.	N	...	...	...	...	G	Oct. 21	05 p.m. ADT
Oct. 22	13 39 32.2	63.63 N.	150.57 W.	N	...	...	3.1M	...	G	Oct. 22	04 a.m. ADT
Oct. 22	17 03 21.3	60.04 N.	147.11 W.	N	...	...	...	...	G	Oct. 22	08 a.m. ADT
Oct. 24	22 05 16.0	59.82 N.	147.60 W.	45	3.8	...	...	...	G	Oct. 24	01 p.m. ADT
Oct. 24	22 16 02.6	63.33 N.	151.18 W.	N	...	...	...	...	G	Oct. 24	01 p.m. ADT
Oct. 25	07 39 49.3	56.42 N.	153.53 W.	32	4.5	...	...	...	G	Oct. 24	10 p.m. ADT
Oct. 25	19 12 37.0	62.83 N.	151.08 W.	136	...	...	...	...	G	Oct. 25	10 a.m. ADT
Oct. 26	23 24 05.8	59.45 N.	150.41 W.	52	3.5	...	...	...	G	Oct. 26	02 p.m. ADT
Oct. 28	04 22 56.6	57.44 N.	156.71 W.	14	4.7	4.3	...	...	G	Oct. 27	06 p.m. AST
Oct. 31	05 04 14.4	51.16 N.	179.63 E.	66	4.9	...	...	...	G	Oct. 30	06 p.m. BST
Oct. 31	17 59 48.6	52.77 N.	167.01 W.	36	4.9	...	...	...	G	Oct. 31	06 a.m. BST
Nov. 1	17 04 16.0	59.43 N.	146.08 W.	N	...	...	3.6M	...	G	Nov. 1	07 a.m. AST
Nov. 2	09 54 36.3	51.01 N.	179.72 W.	N	4.3	...	...	...	G	Nov. 1	10 p.m. BST
Nov. 2	11 30 36.9	61.89 N.	150.80 W.	61	...	...	...	...	G	Nov. 2	01 a.m. AST
Nov. 2	19 36 25.2	61.34 N.	151.74 W.	106	...	...	...	...	G	Nov. 2	09 a.m. AST
Nov. 3	00 30 52.1	64.78 N.	149.38 W.	N	...	...	3.3M	...	G	Nov. 2	02 p.m. AST
Nov. 4	21 17 36.7	63.48 N.	151.36 W.	N	...	...	...	...	G	Nov. 4	11 a.m. AST
Nov. 4	23 32 ...	Near Fairbanks		...	...	...	...	III	...	Nov. 4	01 p.m. AST
Nov. 5	10 24 53.9	60.05 N.	140.43 W.	13	4.0	...	4.0M	...	G	Nov. 5	01 a.m. YST
Nov. 6	09 23 08.9	60.18 N.	153.85 W.	194	4.4	...	...	...	G	Nov. 5	11 p.m. AST
Nov. 6	23 26 56.9	61.31 N.	152.28 W.	122	...	...	...	...	G	Nov. 6	01 p.m. AST
Nov. 7	18 45 41.1	52.61 N.	174.01 E.	21	4.5	...	...	IV	G	Nov. 7	07 a.m. BST
Nov. 9	18 01 20.7	62.16 N.	153.25 W.	N	...	...	3.0M	...	G	Nov. 9	08 a.m. AST
Nov. 11	01 20 ...	Near Fairbanks		...	...	...	...	II	...	Nov. 10	03 p.m. AST
Nov. 11	05 17 51.0	51.63 N.	178.11 W.	68	5.8	...	...	VI	G	Nov. 10	06 p.m. BST
Nov. 11	05 59 16.1	61.50 N.	146.38 W.	61	...	...	...	...	G	Nov. 10	07 p.m. AST

TABLE 1.—*Summary of United States earthquakes for October-December 1974*—Continued

Date (1974)	Origin time (UTC) hr min s	Lat		Long		Depth (km)	Magnitude m_b	Magnitude M_S	Magnitude M_L or m_{bLg}	Maximum intensity	Hypocenter source	Local time date	Local time hour
Alaska—Continued													
Nov. 12	00 03 11.1	60.18	N.	150.97	W.	94	4.0	...	...	...	G	Nov. 11	02 p.m. AST
Nov. 14	04 48 54.7	58.80	N.	154.62	W.	37	5.5	{5.6 5.3B}	5.4M	V	G	Nov. 13	06 p.m. AST
Nov. 14	05 06 12.5	58.83	N.	154.28	W.	61	3.9	...	...	...	G	Nov. 13	07 p.m. AST
Nov. 14	06 02 36.7	58.53	N.	154.09	W.	N	3.6	...	4.0M	...	G	Nov. 13	08 p.m. AST
Nov. 14	06 04 04.6	58.65	N.	153.59	W.	N	4.4	...	...	...	G	Nov. 13	08 p.m. AST
Nov. 14	07 34 58.6	59.35	N.	153.39	W.	137	...	...	...	...	G	Nov. 13	09 p.m. AST
Nov. 14	09 49 47.0	58.47	N.	154.50	W.	N	...	...	...	...	G	Nov. 13	11 p.m. AST
Nov. 14	11 55 45.6	56.38	N.	153.17	W.	N	3.7	...	...	...	G	Nov. 14	01 a.m. AST
Nov. 14	12 28 46.6	58.36	N.	154.77	W.	N	...	...	...	...	G	Nov. 14	02 a.m. AST
Nov. 14	13 24 10.4	55.35	N.	162.54	W.	18	4.4	...	...	...	G	Nov. 14	02 a.m. BST
Nov. 15	03 01 31.6	58.74	N.	154.64	W.	42	4.8	4.1	...	...	G	Nov. 14	05 p.m. AST
Nov. 15	03 10 14.2	58.45	N.	154.46	W.	N	...	...	...	...	G	Nov. 14	05 p.m. AST
Nov. 15	05 43 43.0	58.84	N.	154.52	W.	60	3.8	...	...	V	G	Nov. 14	07 p.m. AST
Nov. 15	06 25 29.7	63.45	N.	151.16	W.	40	...	...	...	...	G	Nov. 14	08 p.m. AST
Nov. 15	19 02 28.4	51.33	N.	178.89	W.	43	4.2	...	...	...	G	Nov. 15	08 a.m. BST
Nov. 16	09 59 25.5	62.63	N.	152.10	W.	N	...	...	3.0M	...	G	Nov. 15	11 p.m. AST
Nov. 18	17 59 07.0	61.24	N.	147.53	W.	22	...	...	3.0M	...	G	Nov. 18	07 a.m. AST
Nov. 19	10 35 01.3	62.29	N.	150.77	W.	N	...	...	3.0M	...	G	Nov. 19	12 a.m. AST
Nov. 20	00 09 15.0	53.60	N.	165.25	W.	57	5.0	...	...	...	G	Nov. 19	01 p.m. BST
Nov. 20	01 58 56.1	66.20	N.	149.29	W.	N	3.6	...	...	...	G	Nov. 19	03 p.m. AST
Nov. 20	05 34 05.6	58.59	N.	154.61	W.	17	4.6	...	4.3M	...	G	Nov. 19	07 p.m. AST
Nov. 21	10 16 22.0	58.63	N.	151.60	W.	N	4.0	...	...	...	G	Nov. 21	12 a.m. AST
Nov. 21	21 15 06.5	61.78	N.	152.03	W.	104	...	...	...	...	G	Nov. 21	11 a.m. AST
Nov. 22	09 31 16.1	64.50	N.	158.02	W.	N	3.7	...	...	...	G	Nov. 21	11 p.m. AST
Nov. 22	16 17 27.6	61.90	N.	152.12	W.	129	...	...	...	...	G	Nov. 22	06 a.m. AST
Nov. 22	18 04 02.1	60.27	N.	153.30	W.	158	4.6	...	...	...	G	Nov. 22	08 a.m. AST
Nov. 26	13 20 32.3	51.62	N.	172.57	E.	29	4.7	...	...	...	G	Nov. 26	02 a.m. BST
Nov. 28	05 28 48.2	51.87	N.	175.27	W.	63	5.2	...	...	IV	G	Nov. 27	06 p.m. BST
Nov. 28	12 25 11.1	65.27	N.	149.81	W.	103	...	...	...	...	G	Nov. 28	02 a.m. AST
Nov. 28	16 31 58.3	53.62	N.	163.70	W.	32	5.3	...	...	...	G	Nov. 28	05 a.m. BST
Nov. 28	18 27 02.8	61.63	N.	148.35	W.	12	...	...	...	II	G	Nov. 28	08 a.m. AST
Nov. 28	22 10 56.2	62.57	N.	150.82	W.	37	...	...	3.2M	...	G	Nov. 28	12 p.m. AST
Nov. 30	12 57 20.6	53.27	N.	172.96	E.	17	5.2	4.9	...	IV	G	Nov. 30	01 a.m. BST
Dec. 1	02 51 58.1	51.56	N.	176.75	W.	55	4.1	...	...	...	G	Nov. 30	03 p.m. BST
Dec. 1	15 56 32.3	62.21	N.	150.53	W.	64	4.0	...	...	...	G	Dec. 1	05 a.m. AST
Dec. 4	20 14 19.4	51.90	N.	170.86	W.	39	4.5	...	...	...	G	Dec. 4	09 a.m. BST
Dec. 6	08 49 07.4	63.07	N.	150.98	W.	126	3.3	...	...	...	G	Dec. 5	10 p.m. AST
Dec. 7	00 47 10.8	51.47	N.	175.00	E.	27	4.5	...	...	...	G	Dec. 6	01 p.m. BST
Dec. 7	07 34 11.0	51.86	N.	170.79	W.	N	5.5	5.8	...	...	G	Dec. 6	08 p.m. BST
Dec. 7	22 02 40.2	51.67	N.	174.76	E.	N	5.0	4.9	...	...	G	Dec. 7	11 a.m. BST
Dec. 8	17 23 18.5	53.71	N.	163.46	W.	N	4.3	...	...	...	G	Dec. 8	06 a.m. BST
Dec. 9	00 12 25.6	61.84	N.	149.79	W.	42	...	...	...	...	G	Dec. 8	02 p.m. AST
Dec. 10	07 49 07.4	51.91	N.	170.86	W.	43	4.1	...	...	...	G	Dec. 9	08 p.m. BST
Dec. 10	15 00 58.0	64.75	N.	149.05	W.	61	...	...	...	IV	G	Dec. 10	05 a.m. AST
Dec. 10	16 05 18.2	61.81	N.	146.89	W.	27	4.4	...	3.3M	...	G	Dec. 10	06 a.m. AST
Dec. 18	05 32 13.5	52.66	N.	168.23	W.	42	4.2	...	...	...	G	Dec. 17	06 p.m. BST
Dec. 19	00 17 21.8	59.78	N.	153.35	W.	123	...	...	...	...	G	Dec. 18	02 p.m. AST
Dec. 19	22 14 57.8	60.81	N.	152.57	W.	151	...	...	...	...	G	Dec. 19	12 p.m. AST
Dec. 20	00 27 29.2	60.88	N.	147.77	W.	N	4.1	...	...	...	G	Dec. 19	02 p.m. AST
Dec. 20	10 48 34.6	63.51	N.	151.51	W.	N	...	...	3.0M	...	G	Dec. 20	12 a.m. AST
Dec. 20	13 39 38.5	58.61	N.	151.23	W.	N	...	...	3.2M	...	G	Dec. 20	03 a.m. AST
Dec. 22	05 32 12.3	51.44	N.	178.52	W.	55	4.6	...	5.1M	III	G	Dec. 21	06 p.m. BST
Dec. 22	19 50 57.3	59.09	N.	154.24	W.	N	...	...	3.1M	...	G	Dec. 22	09 a.m. AST
Dec. 25	02 49 13.0	51.70	N.	174.63	E.	40	5.7	{5.8 5.3B}	5.9M	IV	G	Dec. 24	03 p.m. BST
Dec. 25	06 42 49.8	51.43	N.	174.71	E.	N	4.1	...	...	...	G	Dec. 24	07 p.m. BST
Dec. 25	07 54 46.0	51.73	N.	174.49	E.	37	5.1	4.8	...	...	G	Dec. 24	08 p.m. BST
Dec. 25	11 14 40.7	54.08	N.	163.38	W.	30	4.4	...	...	...	G	Dec. 25	12 a.m. BST

TABLE 1.—*Summary of United States earthquakes for October-December 1974*—Continued

Date (1974)	Origin time (UTC) hr min s	Lat	Long	Depth (km)	Magnitude m_b	Magnitude M_S	Magnitude M_L or m_{bLg}	Maximum intensity	Hypocenter source	Local time date	Local time hour	
Alaska—Continued												
Dec. 25	22 43 51.7	62.17 N.	148.97 W.	N	...	...	3.0M	...	G	Dec. 25	12 p.m.	AST
Dec. 26	18 32 39.2	51.46 N.	174.86 E.	N	4.7	...	...	...	G	Dec. 26	07 a.m.	BST
Dec. 28	00 11 53.7	54.19 N.	162.77 W.	44	4.6	...	...	...	G	Dec. 27	01 p.m.	BST
Dec. 29	13 31 30.7	51.12 N.	178.91 E.	54	4.4	...	...	...	G	Dec. 29	02 a.m.	BST
Dec. 29	18 25 00.7	61.60 N.	150.51 W.	67	5.6	...	...	V	G	Dec. 29	08 a.m.	AST
Dec. 30	03 08 17.7	58.04 N.	151.12 W.	N	...	...	3.7M	...	G	Dec. 29	05 p.m.	AST
Dec. 30	03 33 16.6	61.98 N.	149.69 W.	62	5.1	...	...	V	G	Dec. 29	05 p.m.	AST
Dec. 30	12 27 35.8	61.71 N.	150.81 W.	66	...	...	...	...	G	Dec. 30	02 a.m.	AST
Dec. 31	04 37 31.2	52.53 N.	179.26 W.	228	5.1	...	...	...	G	Dec. 30	05 p.m.	BST
Arizona												
Dec. 20	03 01 10.4	33.86 N.	111.88 W.	...	...	...	2.5G	II	G	Dec. 19	08 p.m.	MST
Dec. 24	05 47 20.7	33.86 N.	111.88 W.	4	...	...	3.0G	III	G	Dec. 23	10 p.m.	MST
Arkansas												
Dec. 13	05 03 57.6	34.67 N.	91.88 W.	5	...	...	3.4S	V	S	Dec. 12	11 p.m.	CST
Dec. 25	13 21 35.0	35.78 N.	90.01 W.	10	...	...	3.0S	II	G	Dec. 25	07 a.m.	CST
California												
Oct. 4	17 43 10.8	35.87 N.	117.28 W.	8	...	...	3.1P	...	P	Oct. 4	10 a.m.	PDT
Oct. 8	00 56 05.1	34.05 N.	118.97 W.	8	3.8	...	4.0P	IV	P	Oct. 7	05 p.m.	PDT
Oct. 11	13 21 31.0	33.23 N.	116.13 W.	8	...	...	3.3P	...	P	Oct. 11	06 a.m.	PDT
Oct. 12	09 54 57.4	34.13 N.	118.98 W.	8	...	...	3.6P	II	P	Oct. 12	02 a.m.	PDT
Oct. 12	12 21 26.1	33.72 N.	116.88 W.	8	...	...	3.5P	II	P	Oct. 12	05 a.m.	PDT
Oct. 12	20 20 44.5	34.20 N.	116.58 W.	8	...	...	3.1P	...	P	Oct. 12	01 p.m.	PDT
Oct. 14	17 33 00.0	34.25 N.	117.15 W.	8	...	...	3.3P	II	P	Oct. 14	10 a.m.	PDT
Oct. 22	12 13 39.1	34.00 N.	118.37 W.	8	4.1	...	2.9P	V	P	Oct. 22	05 a.m.	PDT
Oct. 25	13 29 52.2	33.07 N.	115.62 W.	8	4.3	...	3.3P	II	P	Oct. 25	06 a.m.	PDT
Oct. 26	00 04 45.1	35.37 N.	118.43 W.	8	...	...	3.1P	...	P	Oct. 25	05 p.m.	PDT
Oct. 28	09 12 07.1	35.73 N.	118.38 W.	8	...	...	3.8P	II	P	Oct. 28	01 a.m.	PST
Nov. 5	12 39 12.6	37.89 N.	118.59 W.	5	...	...	3.5B	...	B	Nov. 5	04 a.m.	PST
Nov. 6	00 38 28.0	34.20 N.	118.15 W.	4	...	...	3.0P	II	P	Nov. 5	04 p.m.	pst
Nov. 9	10 10 35.3	33.58 N.	116.67 W.	5	...	...	3.2P	II	P	Nov. 9	02 a.m.	PST
Nov. 9	10 12 57.4	33.58 N.	116.67 W.	6	...	...	3.5P	II	P	Nov. 9	02 a.m.	PST
Nov. 11	04 14 20.0	38.75 N.	122.84 W.	...	...	...	3.5B	V	B	Nov. 10	08 p.m.	PST
Nov. 12	09 14 58.9	34.42 N.	118.42 W.	4	...	...	2.1P	II	P	Nov. 12	01 a.m.	PST
Nov. 18	01 51	Near Milpitas		...	...	...	...	II	...	Nov. 17	05 p.m.	PST
Nov. 18	02 04 53.5	37.50 N.	118.75 W.	2	...	...	3.8P	II	P	Nov. 17	06 p.m.	PST
Nov. 18	06 43 51.6	35.68 N.	117.58 W.	8	...	...	3.6P	II	P	Nov. 17	10 p.m.	PST
Nov. 18	09 59 29.1	34.92 N.	118.45 W.	8	...	...	3.5P	...	P	Nov. 18	01 a.m.	PST
Nov. 20	23 49 38.1	35.80 N.	118.03 W.	8	...	...	3.4P	...	P	Nov. 20	03 p.m.	PST
Nov. 21	12 55 16.3	37.50 N.	118.36 W.	10	...	...	{3.4B} {2.6P}	II	G	Nov. 21	04 a.m.	PST
Nov. 21	19 02 34.0	34.18 N.	116.62 W.	8	...	...	3.4P	...	P	Nov. 21	11 a.m.	PST
Nov. 25	03 50 41.4	33.53 N.	116.55 W.	10	...	...	3.4P	II	P	Nov. 24	07 p.m.	PST
Nov. 28	23 01 24.8	36.912 N.	121.497 W.	9	5.0	4.5	5.2B	VI	B	Nov. 28	03 p.m.	PST
Nov. 28	23 07 59.1	34.233 N.	116.800 W.	12	...	...	3.2P	II	P	Nov. 28	03 p.m.	PST
Nov. 28	23 35 57.8	36.932 N.	121.485 W.	9	3.2	...	3.2B	...	B	Nov. 28	03 p.m.	PST
Nov. 29	01 04 07.1	36.925 N.	121.493 W.	8	3.9	...	4.0B	...	B	Nov. 28	05 p.m.	PST
Dec. 1	10 20 54.9	37.258 N.	121.643 W.	6	...	...	3.8B	II	B	Dec. 1	02 a.m.	PST
Dec. 6	12 13 08.0	32.72 N.	115.40 W.	15	4.5	...	4.8P	V	P	Dec. 6	04 a.m.	PST
Dec. 6	13 45 13.6	34.10 N.	118.22 W.	15	...	...	3.5P	V	P	Dec. 6	05 a.m.	PST
Dec. 7	06 18 02.5	34.18 N.	117.63 W.	6	...	...	3.0P	III	P	Dec. 6	10 p.m.	PST
Dec. 16	17 30 00.5	36.89 N.	116.98 W.	5	4.3	...	...	...	G	Dec. 16	09 a.m.	PST

TABLE 1.—*Summary of United States earthquakes for October-December 1974*—Continued

Date (1974)	Origin time (UTC) hr min s	Lat	Long	Depth (km)	Magnitude m_b	Magnitude M_S	Magnitude M_L or m_{bLg}	Maximum intensity	Hypocenter source	Local time date	Local time hour
California—Continued											
Dec. 19	12 36 16.9	34.08 N.	118.08 W.	8	4.0	...	3.7P	IV	P	Dec. 19	04 a.m. PST
Dec. 19	12 39 50.5	34.07 N.	118.08 W.	8	...	...	3.4P	IV	P	Dec. 19	04 a.m. PST
Dec 23	20 51 41.1	33.97 N.	116.37 W.	6	...	...	3.1P	...	P	Dec. 23	12 p.m. PST
Dec. 29	09 51 44.9	37.960 N.	112.362 W.	4	3.1	...	3.5B	V	B	Dec. 29	01 a.m. PST
Dec. 31	20 22 01.2	36.928 N.	121.478 W.	9	...	...	4.4B	IV	B	Dec. 31	12 p.m. PST
California—Off the coast											
Oct. 12	18 43 46.9	40.26 N.	124.67 W.	8	4.5	...	4.2B	...	G	Oct. 12	11 a.m. PDT
Nov. 28	18 16 05.6	40.32 N.	125.13 W.	10	4.5	...	4.0B	IV	G	Nov. 28	10 a.m. PST
Hawaii											
Oct. 15	18 38 05.3	19.42 N.	155.49 W.	8	...	...	4.0H	II	H	Oct. 15	09 a.m. HDT
Oct. 26	23 20 07.1	19.33 N.	155.20 W.	8	...	...	3.7H	II	H	Oct. 26	02 p.m. HDT
Oct. 30	04 57 32.2	19.40 N.	155.41 W.	8	...	...	3.7H	II	H	Oct. 28	06 p.m. HST
Oct. 31	20 01 48.9	19.37 N.	155.08 W.	5	...	...	4.0H	II	H	Oct. 31	10 a.m. HST
Oct. 31	20 45 22.1	19.37 N.	155.07 W.	6	...	...	3.8H	II	H	Oct. 31	10 a.m. HST
Nov. 9	14 46 15.7	19.38 N.	155.14 W.	7	...	...	3.2H	II	H	Nov. 9	04 a.m. HST
Nov. 10	11 53 14.7	19.40 N.	155.42 W.	8	...	...	4.1H	II	H	Nov. 10	01 a.m. HST
Nov. 13	04 59 04.1	19.42 N.	155.28 W.	2	...	...	3.5H	II	H	Nov. 12	06 p.m. HST
Nov. 16	15 12 41.0	19.19 N.	156.23 W.	18	...	...	3.8H	II	H	Nov. 16	05 a.m. HST
Nov. 22	07 49 14.7	19.34 N.	155.31 W.	29	3.9	...	4.5H	II	H	Nov. 21	09 p.m. HST
Nov. 30	13 54 23.4	19.42 N.	155.41 W.	7	5.1	5.5	5.3H	II	H	Nov. 30	03 a.m. HST
Nov. 30	14 07 37.7	19.49 N.	155.36 W.	8	...	...	3.6H	II	H	Nov. 30	04 a.m. HST
Nov. 30	14 46 54.8	19.44 N.	155.39 W.	8	...	...	3.4H	II	H	Nov. 30	04 a.m. HST
Dec. 8	01 14 27.8	19.41 N.	155.44 W.	8	...	...	4.3H	II	H	Dec. 7	03 p.m. HST
Dec. 8	16 46 31.9	19.42 N.	155.39 W.	7	...	...	3.8H	II	H	Dec. 8	06 a.m. HST
Dec. 11	10 39 05.3	19.45 N.	155.58 W.	1	...	...	3.6H	II	H	Dec. 11	12 a.m. HST
Dec. 11	13 49 52.7	19.43 N.	155.56 W.	6	...	...	3.3H	II	H	Dec. 11	03 a.m. HST
Dec. 12	14 01 19.1	19.37 N.	155.11 W.	6	...	...	3.8H	II	H	Dec. 12	04 a.m. HST
Dec. 15	20 53 47.4	19.45 N.	155.60 W.	4	4.3	...	4.8H	II	H	Dec. 15	10 a.m. HST
Dec. 16	09 17 29.4	19.40 N.	155.42 W.	8	5.0	...	4.9H	V	H	Dec. 15	11 p.m. HST
Dec. 16	09 30 35.7	19.40 N.	155.43 W.	8	...	...	3.7H	II	H	Dec. 15	11 p.m. HST
Dec. 16	19 00 55.0	19.40 N.	155.42 W.	9	...	...	3.9H	II	H	Dec. 16	09 a.m. HST
Dec. 21	18 18 03.9	19.38 N.	155.44 W.	8	...	...	4.2H	II	H	Dec. 21	08 a.m. HST
Dec. 25	17 47 49.5	19.33 N.	155.28 W.	28	4.5	...	4.7H	II	H	Dec. 25	07 a.m. HST
Dec. 26	04 13 20.6	19.23 N.	155.30 W.	5	...	...	4.3H	II	H	Dec. 25	06 p.m. HST
Dec. 26	04 17 10.2	19.23 N.	155.29 W.	5	...	...	4.1H	II	H	Dec. 25	06 p.m. HST
Dec. 26	04 24 14.1	19.22 N.	155.30 W.	5	...	...	4.4H	II	H	Dec. 25	06 p.m. HST
Dec. 29	03 02 38.1	19.75 N.	156.05 W.	4	...	...	3.9H	II	H	Dec. 28	05 p.m. HST
Dec. 29	05 24 23.5	19.35 N.	155.09 W.	7	...	...	4.2H	II	H	Dec. 28	07 p.m. HST
Dec. 30	03 22 10.6	19.32 N.	155.28 W.	29	...	...	4.1H	II	H	Dec. 29	05 p.m. HST
Dec. 30	12 51 43.9	19.40 N.	155.42 W.	7	...	...	3.6H	II	H	Dec. 30	02 a.m. HST
Dec. 31	10 30 27.0	19.39 N.	155.43 W.	5	...	...	3.4H	II	H	Dec. 31	12 a.m. HST
Dec. 31	11 12 56.3	19.37 N.	155.43 W.	21	...	...	3.5H	II	H	Dec. 31	01 a.m. HST
Dec. 31	19 30 56.2	19.32 N.	155.34 W.	5	...	...	3.2H	II	H	Dec. 31	09 a.m. HST
Dec. 31	22 14 02.8	19.29 N.	155.37 W.	6	...	...	3.0H	II	H	Dec. 31	12 p.m. HST
Dec. 31	22 25 29.1	19.30 N.	155.37 W.	3	...	...	3.2H	II	H	Dec. 31	12 p.m. HST
Dec. 31	22 40 47.8	19.29 N.	155.36 W.	4	5.5	5.2	5.3H	V	H	Dec. 31	12 p.m. HST
Dec. 31	23 06 45.0	19.28 N.	155.36 W.	6	...	...	3.0H	II	H	Dec. 31	01 p.m. HST
Dec. 31	23 56 37.3	19.34 N.	155.33 W.	6	...	...	3.5H	II	H	Dec. 31	01 p.m. HST
Idaho											
Oct. 20	02 19 29.5	44.24 N.	111.14 W.	5	...	...	...	...	G	Oct. 19	08 p.m. MDT
Oct. 29	01 48 31.7	44.63 N.	111.31 W.	5	4.0	...	...	...	G	Oct. 28	06 p.m. MST
Dec. 28	13 57 41.1	42.00 N.	111.97 W.	8	...	...	2.8U	IV	G	Dec. 28	06 a.m. MST

TABLE 1.—*Summary of United States earthquakes for October-December 1974*—Continued

Date (1974)	Origin time (UTC) hr min s	Lat	Long	Depth (km)	Magnitude m_b	Magnitude M_S	Magnitude M_L or m_{bLg}	Maximum intensity	Hypocenter source	Local time date	Local time hour
Missouri											
Dec. 13	10 13 21.9	36.70 N.	91.63 W.	5	...	...	2.8S	...	S	Dec. 13	04 a.m. CST
Montana											
Oct. 6	19 57 59.1	45.96 N.	111.57 W.	5	...	...	...	...	G	Oct. 6	01 p.m. MDT
Oct. 13	22 37 21.9	46.01 N.	112.89 W.	5	...	...	...	...	G	Oct. 13	04 p.m. MDT
Oct. 20	15 51 25.2	45.71 N.	110.80 W.	5	...	...	...	...	G	Oct. 20	09 a.m. MDT
Oct. 20	19 23 13.7	45.99 N.	111.43 W.	5	...	...	...	...	G	Oct. 20	01 p.m. MDT
Nov. 28	01 48 23.8	47.69 N.	113.01 W.	5	...	...	...	...	G	Nov. 27	06 p.m. MST
Dec. 2	07 49 04.0	47.40 N.	113.90 W.	5	...	...	...	...	G	Dec. 2	12 a.m. MST
New Mexico											
Nov. 28	03 35 20.5	32.31 N.	104.14 W.	5	3.9	...	{3.7G 4.0B}	...	G	Nov. 27	08 p.m. MST
Oklahoma											
Dec. 16	02 30 21.4	35.33 N.	97.48 W.	10	...	...	2.6T	IV	G	Dec. 15	08 p.m. CST
Oregon											
Dec. 13	03 28 54.2	45.27 N	121.60 W.	22	4.1	...	4.0G	IV	G	Dec. 12	07 p.m. PST
Oregon—Off the coast											
Oct. 18	19 36 48.9	43.48 N.	126.39 W.	N	4.0	...	...	...	G	Oct. 18	12 p.m. PDT
Oct. 19	22 09 42.5	43.29 N.	126.49 W.	N	4.5	...	...	...	G	Oct. 19	03 p.m. PDT
Oct. 21	13 21 00.1	43.60 N.	126.61 W.	N	4.3	...	...	...	G	Oct. 21	06 a.m. PDT
Nov. 17	13 45 09.3	43.71 N.	127.12 W.	N	4.0	...	...	...	G	Nov. 17	05 a.m. PST
Nov. 17	15 27 59.4	43.50 N.	127.04 W.	12	5.1	...	...	...	G	Nov. 17	07 a.m. PST
Dec. 1	11 14 18.7	44.55 N.	129.35 W.	N	4.7	...	...	...	G	Dec. 1	03 a.m. PST
Dec. 15	02 25 19.0	42.52 N.	126.58 W.	N	4.2	...	...	...	G	Dec. 14	06 p.m. PST
Rhode Island											
Oct. 1	06 36 22.5	41.60 N.	71.50 W.	...	...	...	2.2C	II	C	Oct. 1	02 a.m. EDT
South Carolina											
Nov. 22	05 25 55.5	32.900 N.	80.145 W.	18	4.7	...	...	VI	G	Nov. 22	12 a.m. EST
Texas											
Dec. 30	08 05 27.1	30.92 N.	103.11 W.	5	...	...	3.7G	...	G	Dec. 30	02 a.m. CST
Utah											
Nov. 4	09 02 28.0	38.34 N.	112.33 W.	17	4.3	...	3.9G	II	G	Nov. 4	02 a.m. MST
Washington											
Nov. 1	20 22 59.1	48.64 N.	123.19 W.	53	...	...	{3.5W 3.2G}	III	W	Nov. 1	12 p.m. PST
Dec. 1	06 23 56.4	47.603 N.	122.307 W.	12.7	...	...	2.9W	II	W	Nov. 30	10 p.m. PST
Dec. 15	17 59 05.7	48.500 N.	122.082 W.	1.0	...	...	3.1W	VI	W	Dec. 15	09 a.m. PST
Dec. 15	18 06 58.7	48.496 N.	122.074 W.	2.4	...	...	2.1W	III	W	Dec. 15	10 a.m. PST

TABLE 1.—*Summary of United States earthquakes for October-December 1974*—Continued

Date (1974)	Origin time (UTC) hr min s	Lat	Long	Depth (km)	Magnitude m_b	M_S	M_L or m_{bLg}	Maximum intensity	Hypocenter source	Local time date	hour
West Virginia											
Oct. 20	15 13 55.1	39.095 N.	81.593 W.	11	...	...	3.1V	V	G	Oct. 20	11 a.m. EDT
Wyoming											
Oct. 18	06 25 28.1	44.73 N.	110.74 W.	5	4.4	...	...	II	G	Oct. 18	12 a.m. MDT
Oct. 18	06 59 11.5	44.74 N.	110.74 W.	5	3.5	...	...	II	G	Oct. 18	12 a.m. MDT
Oct. 20	02 14 55.0	44.47 N.	111.01 W.	5	...	...	...	II	G	Oct. 19	08 p.m. MDT
Oct. 20	06 45 34.3	44.94 N.	110.86 W.	5	...	...	...	...	G	Oct. 20	12 a.m. MDT
Oct. 20	22 49 46.9	44.73 N.	110.64 W.	5	...	...	...	...	G	Oct. 20	04 p.m. MDT
Oct. 20	22 57 04.4	44.78 N.	110.89 W.	5	...	...	...	...	G	Oct. 20	04 p.m. MDT
Oct. 22	08 43 07.1	44.74 N.	110.81 W.	5	4.6	...	...	IV	G	Oct. 22	02 a.m. MDT
Oct. 30	09 14 48.8	44.82 N.	110.79 W.	5	3.9	...	...	...	G	Oct. 30	02 a.m. MST

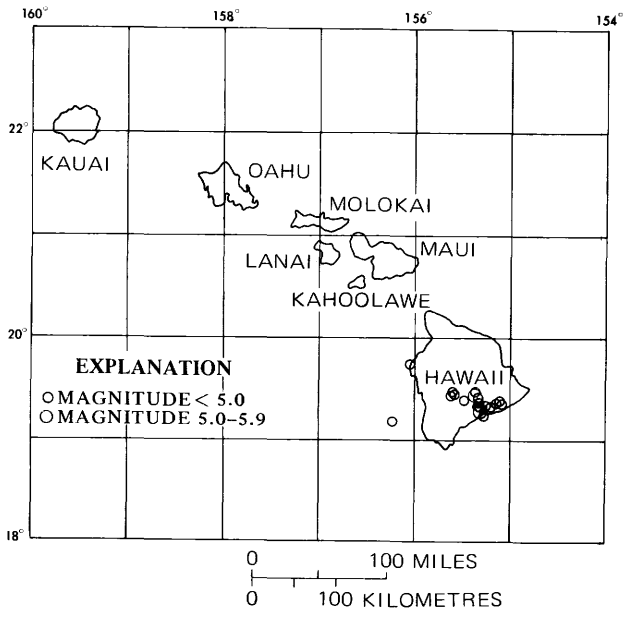

FIGURE 6.—Earthquake epicenters in Hawaii for October-December 1974, plotted from table 1.

shown below, from the evaluation of "Earthquake Report" forms, from field reports by U.S. Geological Survey personnel, engineering firms, or universities, and from detailed macroseismic data communicated to the NEIS by people in the area affected by the earthquake. All earthquake reports received which contain minimal information are assigned an Intensity II. These reports are filed in the offices of the NEIS or in Government archives and are available for detailed study.

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.

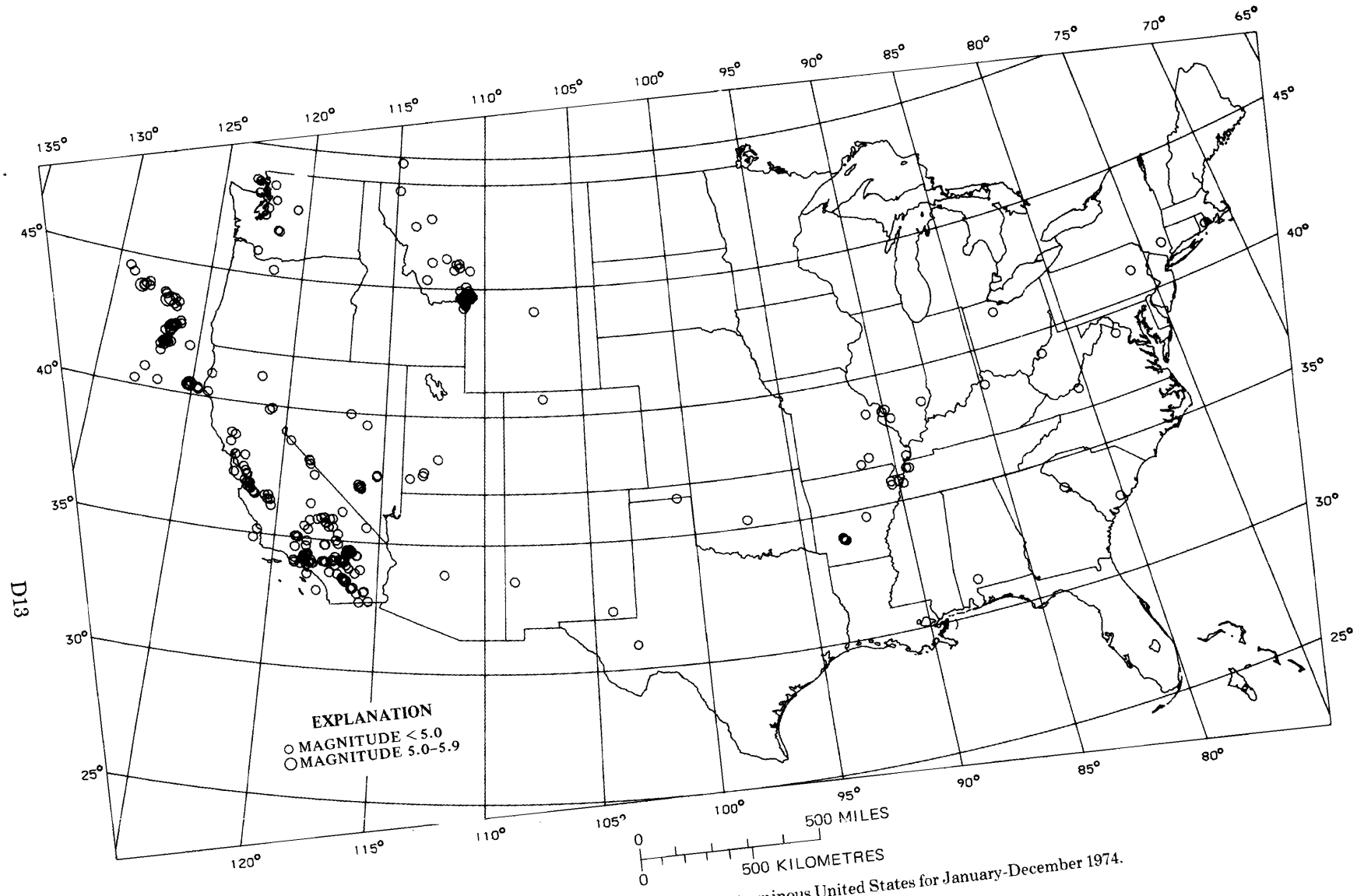

FIGURE 7.—Summary of earthquake epicenters in the conterminous United States for January-December 1974.

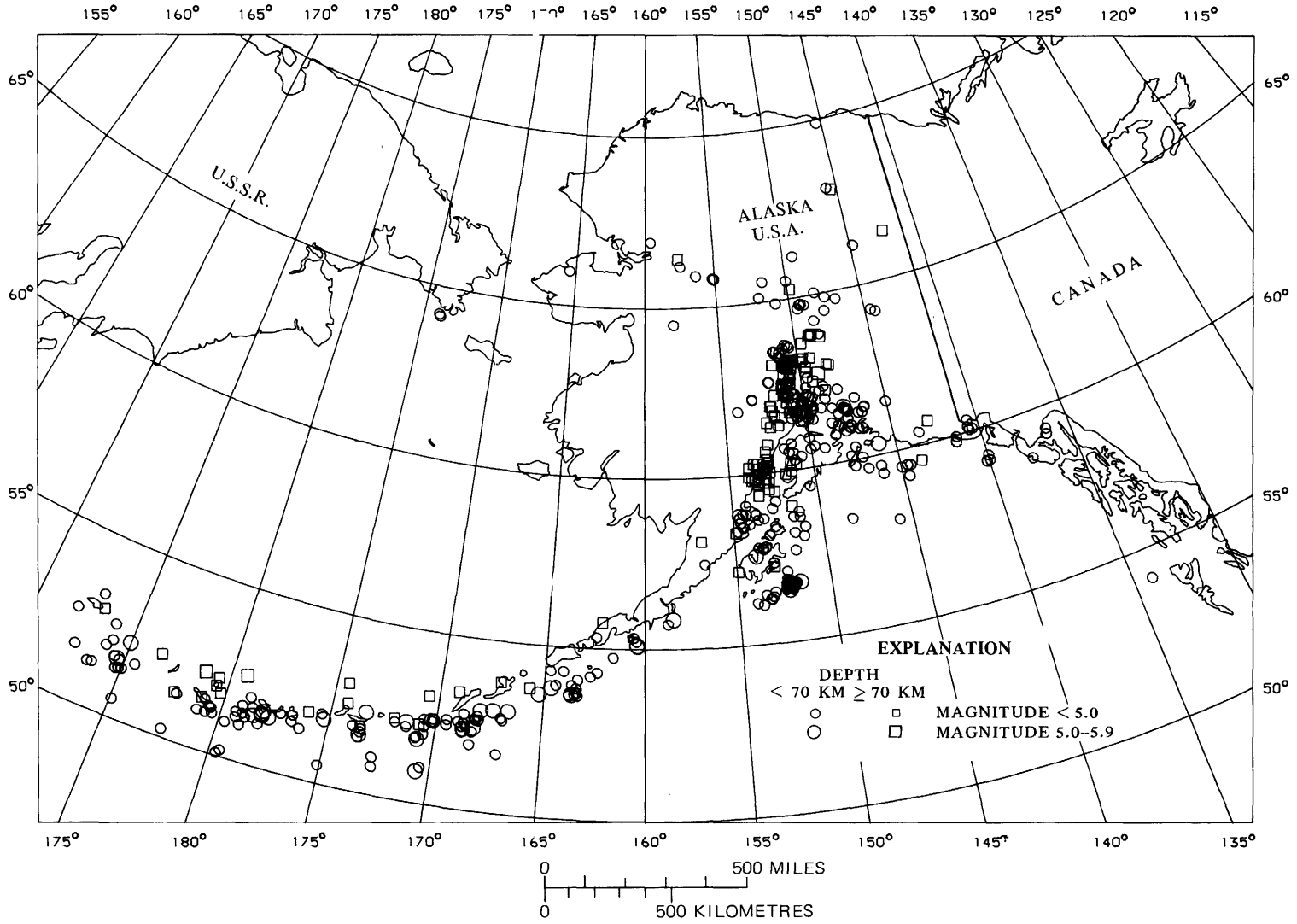

FIGURE 8.—Summary of earthquake epicenters in Alaska for January-December 1974.

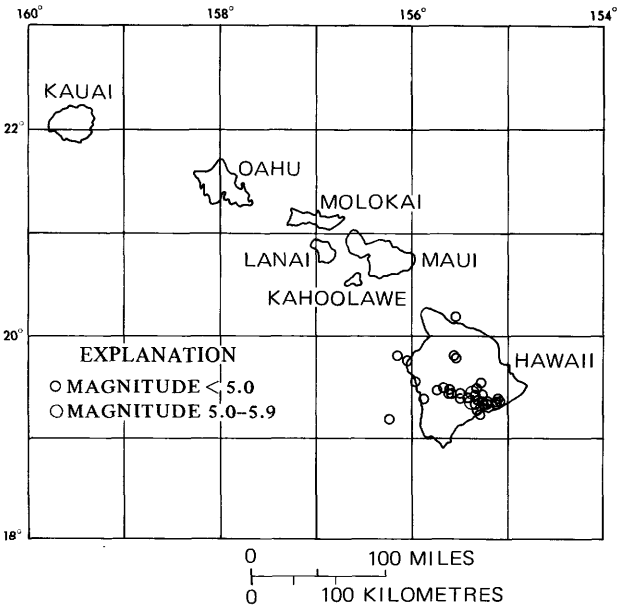

FIGURE 9.—Summary of earthquake epicenters in Hawaii for January-December 1974.

TABLE 2.—*Summary of macroseismic data for United States earthquakes, October-December 1974*

[Sources of the hypocenter and magnitudes: (B) University of California at Berkeley; (C) University of Connecticut, Groton; (G) U.S. Geological Survey, National Earthquake Information Service; (H) U.S. Geological Survey, Hawaiian Volcano Observatory; (M) NOAA, Palmer Observatory, Alaska; (P) California Institute of Technology, Pasadena; (S) St. Louis University, St. Louis, Missouri; (T) University of Oklahoma, Leonard; (U) Univeristy of Utah, Salt Lake City; (V) Virginia Polytechnic Institute and State University, Blacksburg; (W) University of Washington, Seattle. Dates and origin times are listed in Universal Coordinated Time (UTC), giving the hour, minute, and second. Only earthquakes with intensity data and explosions are listed]

Alabama

10 December (G) — Southern Alabama
- Origin time: 06 01 32.7
- Epicenter: 31.35°N., 87.47° W.
- Depth: 10 km
- Magnitude: $3.0M_L$ (S)
- *Intensity V:* Huxford (small objects fell).

Alaska

9 October — Central Alaska
- Origin time: 06 00 04.7
- Epicenter: Not located.
- Depth: None computed.
- Magnitude: None computed.
- *Intensity IV:* Fairbanks.

14 October — Central Alaska
- Origin time: 01 20
- Epicenter: Not located.
- Depth: None computed.
- Magnitude: None computed.
- *Intensity IV:* Fairbanks.
- *Intensity III:* College.

TABLE 2.—*Summary of macroseismic data for United States earthquakes, October-December 1974*—Continued

Alaska—Continued

4 November — Central Alaska
- Origin time: 23 32
- Epicenter: Not located.
- Depth: None computed.
- Magnitude: None computed.
- *Intensity III:* Fairbanks.

7 November (G) — Near Islands, Aleutian Islands
- Origin time: 18 45 41.1
- Epicenter: 52.61° N., 174.01° E.
- Depth: 21 km
- Magnitude: $4.5m_b$
- *Intensity IV:* Shemya Island.

11 November — Central Alaska
- Origin time: 01 20
- Epicenter: Not located.
- Depth: None computed.
- Magnitude: None computed.
- *Intensity II:* College Observatory, Fairbanks.

11 November (G) — Andreanof Islands, Aleutian Islands
- Origin time: 05 17 51.0
- Epicenter: 51.63° N., 178.11° W.
- Depth: 68 km
- Magnitude: $5.8m_b$
- *Intensity VI:* Adak (minor damage).

14 November (G) — Alaska Peninsula
- Origin time: 04 48 54.7
- Epicenter: 58.80° N., 154.62° W.
- Depth: 37 km
- Magnitude: 5.5 m_b, 5.6 M_S, 5.3 M_S (B), 5.4 M_L (M)
- *Intensity V:* King Salmon Airport.
- *Intensity III:* Homer, Iliamna.

15 November (G) — Alaska Peninsula
- Origin time: 05 43 43.0
- Epicenter: 58.84° N., 154.52° W.
- Depth: 60 km
- Magnitude: 3.8 m_b
- *Intensity V:* King Salmon.

28 November (G) — Andreanof Islands, Aleutian Islands
- Origin time: 05 28 48.2
- Epicenter: 51.87° N., 175.27° W.
- Depth: 63 km
- Magnitude: 5.2 m_b
- *Intensity IV:* Adak.

28 November (G) — Southern Alaska
- Origin time: 18 27 02.8
- Epicenter: 61.63° N., 148.35° W.
- Depth: 12 km
- Magnitude: None computed.
- *Intensity II:* Palmer.

TABLE 2.—*Summary of macroseismic data for United States earthquakes, October–December 1974*—Continued

Alaska—Continued

30 November (G) Near Islands, Aleutian Islands
- Origin time: 12 57 20.6
- Epicenter: 53.27° N., 172.96° E.
- Depth: 17 km
- Magnitude: 5.2 m_b, 4.9 M_S
- *Intensity IV:* Attu Island.

10 December (G) Central Alaska
- Origin time: 15 00 58.0
- Epicenter: 64.75° N., 149.05° W.
- Depth: 61 km
- Magnitude: None computed.
- *Intensity IV:* Fairbanks.

22 December (G) Andreanof Islands, Aleutian Islands
- Origin time: 05 32 12.3
- Epicenter: 51.44° N., 178.52° W.
- Depth: 55 km
- Magnitude: 4.6 m_b, 5.1 M_L (M)
- *Intensity III:* Adak.

25 December (G) Near Islands, Aleutian Islands
- Origin time: 02 49 13.0
- Epicenter: 51.70°N., 174.63°E.
- Depth: 40 km
- Magnitude: 5.7 m_b, 5.8 M_S, 5.3 M_S (B), 5.9 M_L (M)
- *Intensity IV:* Shemya Island.

29 December (G) Southern Alaska
- Origin time: 18 25 00.7
- Epicenter: 61.60° N., 150.51° W.
- Depth: 67 km
- Magnitude: 5.6 m_b
- *Intensity V:* Anchorage, Talkeetna, Wasilla.
- *Intensity IV:* Elmendorf Air Base, Palmer.
- *Intensity III:* Soldotna, Tyonek.

30 December (G) Southern Alaska
- Origin time: 03 33 16.6
- Epicenter: 61.98° N., 149.69° W.
- Depth: 62 km
- Magnitude: 5.1 m_b
- *Intensity V:* Elmendorf Air Base.
- *Intensity III:* Anchorage, Palmer.

Arizona

20 December (G) Central Arizona
- Origin time: 03 01 10.4
- Epicenter: 33.86° N., 111.88° W.
- Depth: None computed.
- Magnitude: 2.5 M_L.
- *Intensity II:* New River.

24 December (G) Central Arizona
- Origin time: 05 47 20.7
- Epicenter: 33.86°N., 111.88°W.
- Depth: 4 km
- Magnitude: 3.0 M_L
- *Intensity III:* New River.

TABLE 2.—*Summary of macroseismic data for United States earthquakes, October–December 1974*—Continued

Arkansas

13 December (S) Central Arkansas
- Origin time: 05 03 57.6
- Epicenter: 34.67° N., 91.88° W.
- Depth: 5 km
- Magnitude: 3.4 m_{bLg}
- *Intensity V:* Tucker.
- *Intensity IV:* Coy, England, Humnoke, Humphrey, Keo, Little Rock, Wabbaseka.
- *Intensity III:* Ethel, Mabelvale, Scott, Sheridan, Sweet Home.
- *Intensity II:* Dumas.

25 December (G) Northeast Arkansas
- Origin time: 13 21 35.0
- Epicenter: 35.78° N., 90.01° W.
- Depth: 10 km
- Magnitude: 3.0 m_{bLg} (S)
- *Intensity II:* Armorel, Blytheville.

California

8 October (P) Southern California
- Origin time: 00 56 05.1
- Epicenter: 34.05° N., 118.97° W.
- Depth: 8 km
- Magnitude: 3.8 m_b (G), 4.0 M_L
- *Intensity IV:* Ventura-Camarillo area (press report).

12 October (P) Southern California
- Origin time: 09 54 57.4
- Epicenter: 34.13° N., 118.98° W.
- Depth: 8 km
- Magnitude: 3.6 M_L
- *Intensity II:* Solromar.

12 October (P) Southern California
- Origin time: 12 21 26.1
- Epicenter: 33.72° N., 116.88° W.
- Depth: 8 km
- Magnitude: 3.5 M_L
- *Intensity II:* Hemet.

14 October (P) Southern California
- Origin time: 17 33 00.0
- Epicenter: 34.25° N., 117.15° W.
- Depth: 8 km
- Magnitude: 3.3 M_L
- *Intensity II:* Lake Arrowhead.

22 October (P) Southern California
- Origin time: 12 13 39.1
- Epicenter: 34.00° N., 118.37° W.
- Depth: 8km
- Magnitude: 4.1 m_b (G), 2.9 M_L
- *Intensity V:* Newhall.
- *Intensity IV:* Los Angeles, Topanga
- *Intensity III:* Culver City, Hawthorne, Lawndale, Seal Beach.

TABLE 2.—*Summary of macroseismic data for United States earthquakes, October–December 1974*—Continued

California—Continued

22 October (P) Southern California—Continued
Intensity II: Beverly Hills, Inglewood, Pico, Rivera, Santa Monica, Torrance, Vernon, West Los Angeles.

25 October (P) Southern California
Origin time: 13 29 52.2
Epicenter: 33.07° N., 115.62° W.
Depth: 8 km
Magnitude: 4.3 m_b (G), 3.3 M_L
Intensity II: Imperial Valley.

28 October (P) Central California
Origin time: 09 12 07.1
Epicenter: 35.73° N., 118.38° W.
Depth: 8 km
Magnitude: 3.8 M_L
Intensity II: Kernville area.

6 November (P) Southern California
Origin time: 00 38 28.0
Epicenter: 34.20° N., 118.15° W.
Depth: 4 km
Magnitude: 3.0 M_L
Intensity II: Altadena, Pasadena, Sierra Madre (press report).

9 November (P) Southern California
Origin time: 10 10 35.3
Epicenter: 33.58° N., 116.67° W.
Depth: 5 km
Magnitude: 3.2 M_L
Intensity II: Palm Springs area.

9 November (P) Southern California
Origin time: 10 12 57.4
Epicenter: 33.58° N., 116.67° W.
Depth: 6 km
Magnitude: 3.5 M_L
Intensity II: Palm Springs area.

11 November (B) Northern California
Origin time: 04 14 20.0
Epicenter: 38.75° N., 122.84° W.
Depth: None computed.
Magnitude: 3.5 M_L
Intensity V: Sonoma County (minor rockslides), Geysers powerplant (vehicles rocked, buildings cracked, windows rattled).

12 November (P) Southern California
Origin time: 09 14 58.9
Epicenter: 34.42° N., 118.42° W.
Depth: 4 km
Magnitude: 2.1 M_L
Intensity II: San Fernando area.

18 November (P) Central California
Origin time: 01 51
Epicenter: Not located.

TABLE 2.—*Summary of macroseismic data for United States earthquakes, October–December 1974*—Continued

California—Continued

18 November (P) Central California—Continued
Depth: None computed.
Magnitude: None computed.
Intensity II: Milpitas area.

18 November (P) Central California
Origin time: 02 04 53.5
Epicenter: 37.50° N., 118.75° W.
Depth: 2 km
Magnitude: 3.8 M_L
Intensity II: Bishop area.

18 November (P) Central California
Origin time: 06 43 51.6
Epicenter: 35.68° N., 117.58° W.
Depth: 8 km
Magnitude: 3.6 M_L
Intensity II: Ridgecrest.

21 November (G) California–Nevada border region
Origin time: 12 55 16.3
Epicenter: 37.50° N., 118.36° W.
Depth: 10 km
Magnitude: 3.4 M_L (B), 2.6 M_L (P)
Intensity II: Mammoth Lakes to Bridgeport, California. 20 tremors felt in Owens and Chalfont Valleys.

25 November (P) Southern California
Origin time: 03 50 41.4
Epicenter: 33.53° N., 116.55° W.
Depth: 10 km
Magnitude: 3.4 M_L
Intensity II: Alpine, Banning, Hemet.

28 November (B) Central California
Origin time: 23 01 24.8
Epicenter: 36.912° N., 121.497° W.
Depth: 9 km
Magnitude: 5.0 m_b, 4.5 M_S (G), 5.2 M_L Felt
Felt over an area of 18,000 km² (fig. 10).

Intensity VI: Hollister (cracked windows).

Intensity V: Ben Lomond, Gilroy, Morgan Hill, San Juan Bautista, Watsonville.

Intensity IV: Aromas, Big Sur, Boulder Creek, Brookdale, Burlingame, Capitola, Carmel, Carmel Valley, Castroville, Daly City, Felton, Freedom, King City, La Selva Beach, Loma Mar, Marina, Mount Hermon, New Almaden, Pacific Grove, Palo Alto, Redwood Estates, Salinas, San Francisco, San Jose, San Lorenzo, San Martin, Santa Cruz, Seaside, Spreckels.

Intensity III: Aptos, Castro Valley, Chualar, Crows Landing, Cupertino, Dos Palos, Fremont, Friant, Hillsborough, La Honda, Los Altos Hills, Los Banos, Milpitas, Monterey, Patterson, Pebble Beach, Pescadero, Pleasanton, San Ardo, San Bruno, Santa Clara, Soledad, Tiburon, Westley.

TABLE 2.—*Summary of macroseismic data for United States earthquakes, October–December 1974*—Continued

California—Continued	
28 November (B)	Central California—Continued
Intensity II:	Bradley, Elk Grove, Fresno, Greenfield, Hathaway Pines, Holy City, Newman, Petaluma, Stinson Beach, Vacaville.
28 November (P)	Southern California
Origin time:	23 07 59.1
Epicenter:	34.233° N., 116.800° W.
Depth:	12 km
Magnitude:	3.2 M_L
Intensity II:	Big Bear area.
1 December (B)	Central California
Origin time:	10 20 54.9
Epicenter:	37.258° N., 121.643° W.
Depth:	6 km
Magnitude:	3.8 M_L
Intensity II:	Gilroy, Hollister, Morgan Hill, San Jose.

TABLE 2.—*Summary of macroseismic data for United States earthquakes, October–December 1974*—Continued

California—Continued	
6 December (P)	California-Mexico border region
Origin time:	12 13 08.0
Epicenter:	32.72° N., 115.40° W.
Depth:	15 km
Magnitude:	4.5 m_b (G), 4.8 M_L
Intensity V:	Brawley, Calexico (cracked plaster at the El Rey Hotel), Imperial.
Intensity IV:	El Centro, Heber, Seeley, Winterhaven.
Intensity II:	Yuma, Arizona.
6 December (P)	Southern California
Origin time:	13 45 13.6
Epicenter:	34.10° N., 118.22° W.
Depth:	15 km
Magnitude:	3.5 M_L
Intensity V:	Hollywood (cracked plaster; press report).
Intensity IV:	Glendale.

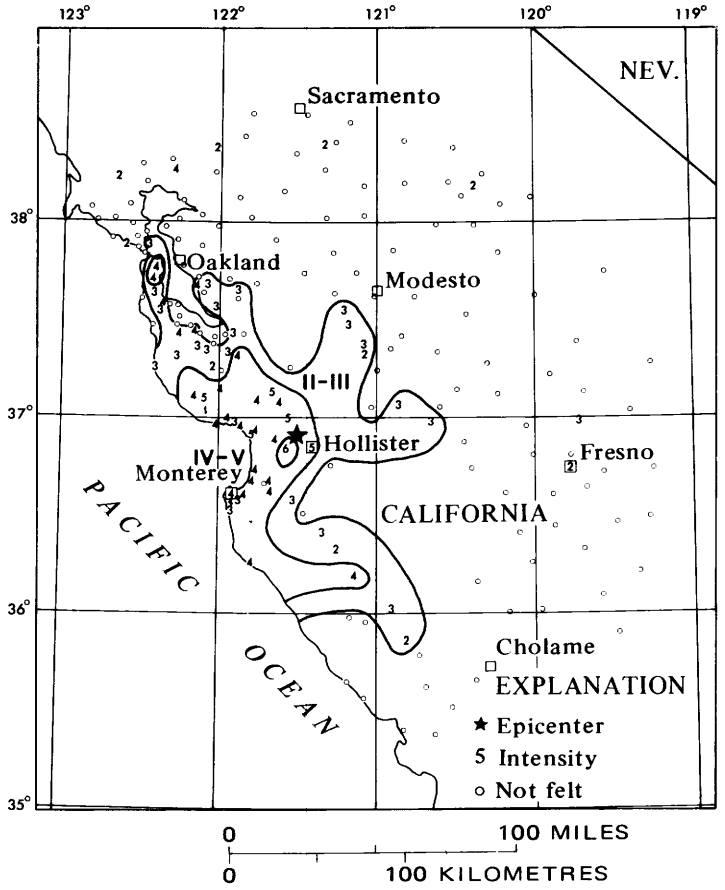

FIGURE 10.—Isoseismals for the central California earthquake of 28 November 1974, 23 01 24.8 UTC.

TABLE 2.—*Summary of macroseismic data for United States earthquakes, October–December 1974*—Continued

California—Continued

6 December (P) Southern California—Continued
Intensity III: Altadena, La Canada, North Hollywood.

7 December (P) Southern California
Origin time: 06 18 02.5
Epicenter: 34.18° N., 117.63° W.
Depth: 6 km
Magnitude: 3.0 M_L
Intensity III: Etiwanda.

19 December (P) Southern California
Origin time: 12 36 16.9
Epicenter: 34.08° N., 118.08° W.
Depth: 8 km
Magnitude: 4.0 m_b (G), 3.7 M_L
Intensity IV: Glendale, Hollywood, Los Angeles, South San Gabriel.

19 December (P) Southern California
Origin time: 12 39 50.5
Epicenter: 34.07° N., 118.08° W.
Depth: 8 km
Magnitude: 3.4 M_L
Intensity IV: Glendale, Hollywood, Los Angeles, South San Gabriel.

29 December (B) Northern California
Origin time: 09 51 44.9
Epicenter: 37.960° N., 122.362° W.
Depth: 4 km
Magnitude: 3.1 m_b (G), 3.5 M_L
Intensity V: Richmond.
Intensity IV: Berkeley, El Cerrito, Pinole.

31 December (B) Central California
Origin time: 20 22 01.2
Epicenter: 36.928° N., 121.478° W.
Depth: 9 km
Magnitude: 4.4 M_L
Intensity IV: Castroville, Hollister, Monterey, Salinas.
Intensity III: Friant, San Martin, Seaside.
Intensity II: Oakland, San Francisco, San Jose.

California—Off the coast

28 November (G) Near the coast—Northern California
Origin time: 18 16 05.6
Epicenter: 40.32° N., 125.13° W.
Depth: 10 km
Magnitude: 4.5 m_b, 4.0 M_L (B)
Intensity IV: Ferndale, Scotia
Intensity III: Rio Dell.

Hawaii

15 October (H) Hawaii Island
Origin time: 18 38 05.3
Epicenter: 19.42° N., 155.49° W.
Depth: 8 km

TABLE 2.—*Summary of macroseismic data for United States earthquakes, October–December 1974*—Continued

Hawaii—Continued

15 October (H) Hawaii Island—Continued
Magnitude: 4.0 M_L
Intensity II: Kapapala Ranch

26 October (H) Hawaii Island
Origin time: 23 20 07.1
Epicenter: 19.33°N., 155.20° W.
Depth: 8 km
Magnitude: 3.7 M_L
Intensity II: Hawaii Volcanoes National Park, Hilo.

30 October (H) Hawaii Island
Origin time: 04 57 32.2
Epicenter: 19.40° N., 155.41° W.
Depth: 8 km
Magnitude: 3.7 M_L
Intensity II: Pahala.

31 October (H) Hawaii Island
Origin time: 20 01 48.9
Epicenter: 19.37° N., 155.08° W.
Depth: 5 km
Magnitude: 4.0 M_L
Intensity II: Glenwood, Hilo, Kaimu, Kalapana, Pahoa, Volcano.

31 October (H) Hawaii Island
Origin time: 20 45 22.1
Epicenter: 19.37° N., 155.07° W.
Depth: 6 km
Magnitude: 3.8 M_L
Intensity II: Hilo, Kaimu, Volcano.

9 November (H) Hawaii Island
Origin time: 14 46 15.7
Epicenter: 19.38° N., 155.14° W.
Depth: 7 km
Magnitude: 3.2 M_L
Intensity II: Volcano.

10 November (H) Hawaii Island
Origin time: 11 53 14.7
Epicenter: 19.40° N., 155.42° W.
Depth: 8 km
Magnitude: 4.1 M_L
Intensity II: Hawaii Volcanoes National Park, Hilo, Honokaa, Kamuela, Kurtistown, Napoopoo, Onomea, Pahala, Volcano.

13 November (H) Hawaii Island
Origin time: 04 59 04.1
Epicenter: 19.42° N., 155.28° W.
Depth: 2 km
Magnitude: 3.5 M_L
Intensity II: Hawaii Volcanoes Naticnal Park, Volcano.

TABLE 2.—*Summary of macroseismic data for United States earthquakes, October-December 1974*—Continued

Hawaii—Continued

16 November (H) Hawaii Island
Origin time: 15 12 41.0
Epicenter: 19.19° N., 156.23° W.
Depth: 18 km
Magnitude: 3.8 M_L
Intensity II: Napoopoo, South Kona.

22 November (H) Hawaii Island
Origin time: 07 49 14.7
Epicenter: 19.34° N., 155.31° W.
Depth: 29 km
Magnitude: 3.9 m_b (G), 4.5 M_L
Intensity II: Ainahou Ranch, Glenwood, Hawaii Volcanoes National Park, Hilo, Honomu, Humakua, Kamuela, Kapapala Ranch, Kau, Kealakekua, Mountainview, Pahala, Puna, South Kona, Volcano.

30 November (H) Hawaii Island
Origin time: 13 54 23.4
Epicenter: 19.42° N., 155.41° W.
Depth: 7 km
Magnitude: 5.1 m_b (G), 5.5 M_S (G), 5.3 M_L
Intensity II: Islandwide.

30 November (H) Hawaii Island
Origin time: 14 07 37.7
Epicenter: 19.49° N., 155.36° W.
Depth: 8 km
Magnitude: 3.6 M_L
Intensity II: Hilo, Kamuela.

30 November (H) Hawaii Island
Origin time: 14 46 54.8
Epicenter: 19.44° N., 155.39° W.
Depth: 8 km
Magnitude: 3.4 M_L
Intensity II: Hilo.

8 December (H) Hawaii Island
Origin time: 01 14 27.8
Epicenter: 19.41° N., 155.44° W.
Depth: 8 km
Magnitude: 4.3 M_L
Intensity II: Hilo, South Kona.

8 December (H) Hawaii Island
Origin time: 16 46 31.9
Epicenter: 19.42° N., 155.39° W.
Depth 7 km
Magnitude: 3.8 M_L
Intensity II: Hilo.

11 December (H) Hawaii Island
Origin time: 10 39 05.3
Epicenter: 19.45° N., 155.58° W.
Depth: 1 km
Magnitude: 3.6 M_L
Intensity II: Volcano.

TABLE 2.—*Summary of macroseismic data for United States earthquakes, October-December 1974*—Continued

Hawaii—Continued

11 December (H) Hawaii Island
Origin time: 13 49 52.7
Epicenter: 19.43° N., 155.56° W.
Depth: 6 km
Magnitude: 3.3 M_L
Intensity II: Hilo.

12 December (H) Hawaii Island
Origin time: 14 01 19.1
Epicenter: 19.37° N., 155.11° W.
Depth: 6 km
Magnitude: 3.8 M_L
Intensity II: Hilo.

15 December (H) Hawaii Island
Origin time: 20 53 47.4
Epicenter: 19.45° N., 155.60° W.
Depth: 4 km
Magnitude: 4.3 m_b (G), 4.8 M_L
Intensity II: Hawaii Volcanoes National Park, Hilo, Kapapala Ranch, Mauna Loa Observatory, Mauna Loa summit, Volcano.

16 December (H) Hawaii Island
Origin time: 09 17 29.4
Epicenter: 19.40° N., 155.42° W.
Depth: 8 km
Magnitude: 5.0 m_b (G), 4.9 M_L
Intensity V: Ookala, Papaaloa.
Intensity IV: Honokaa, Paauhau.
Intensity II: Hawaii Volcanoes National Park, Kailaa-Kona, Kapapala Ranch, Keaau, Kealakekua, Mountainview, South Kona, Volcano.

16 December (H) Hawaii Island
Origin time: 09 30 35.7
Epicenter: 19.40° N., 155.43° W.
Depth: 8 km
Magnitude: 3.7 M_L
Intensity II: South Kona.

16 December (H) Hawaii Island
Origin time: 19 00 55.0
Epicenter: 19.40° N., 155.42° W.
Depth: 9 km
Magnitude: 3.9 M_L
Intensity II: Hawaii Volcanoes National Park, Hilo.

21 December (H) Hawaii Island
Origin time: 18 18 03.9
Epicenter: 19.38° N., 155.44° W.
Depth: 8 km
Magnitude: 4.2 M_L
Intensity II: Hawaii Volcanoes National Park, Hilo, Pahala, Volcano.

TABLE 2.—*Summary of macroseismic data for United States earthquakes, October–December 1974*—Continued

Hawaii—Continued

25 December (H) Hawaii Island
Origin time: 17 47 49.5
Epicenter: 19.33° N., 155.28° W.
Depth: 28 km
Magnitude: 4.5 m_b, 4.7 M_L
Intensity II: Islandwide on Hawaii, Oahu Island.

26 December (H) Hawaii Island
Origin time: 04 13 20.6
Epicenter: 19.23° N., 155.30° W.
Depth: 5 km
Magnitude: 4.3 M_L
Intensity II: Glenwood, Hilo, Mountainview, Pahala, Volcano.

26 December (H) Hawaii Island
Origin time: 04 17 10.2
Epicenter: 19.23° N., 155.29° W.
Depth: 5 km
Magnitude: 4.1 M_L
Intensity II: Hilo, Volcano.

26 December (H) Hawaii Island
Origin time: 04 24 14.1
Epicenter: 19.22° N., 155.30° W.
Depth: 5 km
Magnitude: 4.4 M_L
Intensity II: Glenwood, Hilo, Pahala, Volcano.

29 December (H) Hawaii Island
Origin time: 03 02 38.1
Epicenter: 19.75° N., 156.05° W.
Depth: 4 km
Magnitude: 3.9 M_L
Intensity II: Kealakekua, Keauhou-Kona.

29 December (H) Hawaii Island
Origin time: 05 24 23.5
Epicenter: 19.35° N., 155.09° W.
Depth: 7 km
Magnitude: 4.2 M_L
Intensity II: Glenwood, Hawaii Volcanoes National Park, Hilo, Kahuku Ranch, Papaikou, Volcano.

30 December (H) Hawaii Island
Origin time: 03 22 10.6
Epicenter: 19.32° N., 155.28° W.
Depth: 29 km
Magnitude: 4.1 M_L
Intensity II: Islandwide.

30 December (H) Hawaii Island
Origin time: 12 51 43.9
Epicenter: 19.40° N., 155.42° W.
Depth: 7 km
Magnitude: 3.6 M_L
Intensity II: Pahala.

TABLE 2.—*Summary of macroseismic data for United States earthquakes, October–December 1974*—Continued

Hawaii—Continued

31 December (H) Hawaii Island
Origin time: 10 30 27.0
Epicenter: 19.39° N., 155.43° W.
Depth: 5 km
Magnitude: 3.4 M_L

A swarm of earthquakes accompanied and followed an eruption of Kilauea Volcano on December 31, 1974. Many hundreds of earthquakes of about 2.0 to 5.3 were felt by residents of Kapapala Ranch, Pahala, Volcano, and the Hawaii Volcanoes National Park. Because of this continuous activity the following list of events may be incomplete.
Intensity II: Hawaii Volcanoes National Park, Kapapala, Pahala, Volcano.

31 December (H) Hawaii Island.
Origin time: 11 12 56.3
Epicenter: 19.37° N., 155.43° W.
Depth: 21 km
Magnitude: 3.5 M_L
Intensity II: Hawaii Volcanoes National Park, Kapapala Ranch, Pahala, Volcano.

31 December (H) Hawaii Island
Origin time: 19 30 56.2
Epicenter: 19.32° N., 155.34° W.
Depth: 5 km
Magnitude: 3.2 M_L
Intensity II: Hawaii Volcanoes National Park, Kapapala Ranch, Pahala, Volcano.

31 December (H) Hawaii Island
Origin time: 22 14 02.8
Epicenter: 19.29° N., 155.37° W.
Depth: 6 km
Magnitude: 3.0 M_L
Intensity II: Hawaii Volcanoes National Park, Kapapala Ranch, Pahala, Volcano.

31 December (H) Hawaii Island
Origin time: 22 25 29.1
Epicenter: 19.30° N., 155.37° W.
Depth: 3 km
Magnitude: 3.2 M_L
Intensity II: Hawaii Volcanoes National Park, Kapapala Ranch, Pahala, Volcano.

31 December (H) Hawaii Island
Origin time: 22 40 47.8
Epicenter: 19.29° N., 155.36° W.
Depth: 4 km
Magnitude: 5.5 m_b (G), 5.2 M_S(G), 5.3 M_L
Intensity V: Kapapala Ranch (minor damage), Islandwide.

31 December (H) Hawaii Island
Origin time: 23 06 45.0
Epicenter: 19.28° N., 155.36° W.

TABLE 2.—*Summary of macroseismic data for United States earthquakes, October-December 1974*—Continued

Hawaii—Continued

31 December (H) Hawaii Island—Continued

Depth: 6 km
Magnitude: 3.0 M_L
Intensity II: Hawaii Volcanoes National Park, Kapapala Ranch, Pahala, Volcano.

31 December (H) Hawaii Island
Origin time: 23 56 37.3
Epicenter: 19.34° N., 155.33° W.
Depth: 6 km
Magnitude: 3.5 M_L
Intensity II: Hawaii Volcanoes National Park, Kapapala Ranch, Pahala, Volcano.

Idaho

28 December (G) Idaho-Utah border
Origin time: 13 57 41.1
Epicenter: 42.00° N., 111.97° W.
Depth: 8 km
Magnitude: 2.8 M_L (U)
Intensity IV:
Idaho—Franklin, Weston.
Utah—Lewiston, Richmond.
Intensity II:
Idaho—Preston.

Oklahoma

16 December (G) Central Oklahoma
Origin time: 02 30 21.4
Epicenter: 35.33° N., 97.48° W.
Depth: 10 km
Magnitude: 2.3 m_{bLg} (S), 2.6 m_{bLg} (T)
The hypocenter parameters are based on a macroseismic location and an arbitrary depth of 10 km.
Intensity IV: Moore.

Oregon

13 December (G) Northern Oregon
Origin time: 03 28 54.2
Epicenter: 45.27° N., 121.60° W.
Depth: 22 km
Magnitude: 4.1 m_b, 4.0 M_L
Intensity IV:
Washington—Camas.
Intensity III:
Oregon—Government Camp, Parkdale.
Intensity II:
Oregon—Mt. Hood vicinity, Timberlake ski area.

Rhode Island

1 October (C) Southern Rhode Island
Origin time: 06 36 22.5
Epicenter: 41.60° N., 71.50° W.
Depth: None computed.
Magnitude: 2.2 m_{bLg}
Intensity II: Coventry, West Warwick.

TABLE 2.—*Summary of macroseismic data for United States earthquakes, October-December 1974*—Continued

South Carolina

22 November (G) Eastern South Carolina
Origin time: 05 25 55.5
Epicenter: 32.900° N., 80.145° W.
Depth: 18 km
Magnitude: 4.7 m_b

The information collected by the NEIS has been supplemented by evaluation of the data collected by the Law Engineering Testing Company of Marietta, Georgia (Benson and others, 1975). This organization conducted an intensity survey by placing questionnaires in local newspapers of the area. Field investigations by the Law Engineering Testing Company confirmed minor damage indicating Intensity VI (MM) in the Charleston vicinity. The felt area for this earthquake is 50,000 km² (fig. 11). This earthquake is located in the same vicinity as the 1886 Charleston earthquake, maximum intensity X, which was felt over an area of 3,200,000 km².

Intensity VI: Charleston, Charleston AFB, Charleston Heights, Ladson, North Charleston, Summerville (cracks in brick-veneer walls, concrete walks, garage floor, plaster walls).

Intensity V: Columbia, Kingstree, McClellanville, Yonges Island.

Intensity IV:
Georgia—Augusta, North Augusta.
South Carolina—Adams Run, Aiken, Alvin, Andrews, Awendaw, Barnwell, Belvedere, Bethune, Bishopville, Blackville, Camden, Cameron, Canadys, Cayce, Chapinere, Conway, Cordesville, Denmark, Edgefield, Elgin, Elko, Elliott, Fort Motte, Gable, Georgetown, Goose Creek, Graniteville, Great Falls, Greeleyville, Hanahan, Harlem, Horatio, Isle of Palms, James Island, Jamestown, Johnsonville, Johnston, Kershaw, Lamar, Lexington, Lugoff, Manning, Marion, Mayesville, McBee, Meggett, Moncks Corner, Mount Holly, Mount Pleasant, Myrtle Beach, Neeses, Nichols, Oswego, Poston, Ravenel, Rembert, Round O, Russelville, Saint Matthews, Salley, Santee, Scranton, Summerton, Swansea, Trio, Vaucluse, Wadmalaw Island.
North Carolina—Brunswick, Davidson, Gibson, Lake Waccamaw.

Intensity III:
Georgia—Claxton.
South Carolina—Bath, Blythewood, Burtonere, Chesterfield, Dorchester, Estill, Evans, Florence, Frogmore, Gaston, Hemingway, Johns Island, Martinez, Modoc, Murrells Inlet, Parr, Parris Island, Pawleys Island, Peak, Pinopolis, Ridgeville, Sheldon, Warrenville, West Columbia.

Intensity II:
South Carolina—Allendale, Beaufort, Cottageville, Fort Jackson, Lynchburg, Parksville, Plum Branch, Ulmers, Williams, Williston.
North Carolina—Teacheys.

TABLE 2.—*Summary of macroseismic data for United States earthquakes, October–December 1974*—Continued

Utah

4 November (G) Utah
- Origin time: 09 02 28.0
- Epicenter: 38.34° N., 112.33° W.
- Depth: 17 km
- Magnitude: 4.3 m_b, 3.9 M_L
- *Intensity II:* Marysvale area.

Washington

1 November (W) Northwest Washington
- Origin time: 20 22 59.1
- Epicenter: 48.64° N., 123.19° W.
- Depth: 53 km
- Magnitude: 3.5 M_L, 3.2 M_L (G)
- *Intensity III:*
  Washington—San Juan and Orcas Islands.
  Canada—Sidney, Vancouver Island.
- *Intensity II:*
  Canada—Victoria, Vancouver Island.

1 December (W) Puget Sound
- Origin time: 06 23 56.4
- Epicenter: 47.603° N., 122.307° W.
- Depth: 12.7 km
- Magnitude: 2.9 M_L
- *Intensity II:* Seattle area.

TABLE 2.—*Summary of macroseismic data for United States earthquakes, October–December 1974*—Continued

Washington—Continued

15 December (W) Northwest Washington
- Origin time: 17 59 05.7
- Epicenter: 48.500° N., 122.082° W.
- Depth: 1.0 km
- Magnitude: 3.0 M_L
- *Intensity VI:* Concrete, Sedro-Woolley area.
- *Intensity V:* Hamilton, Lyman.
- *Intensity III:* Clearlake.

15 December (W) Northwest Washington
- Origin time: 18 06 58.7
- Epicenter: 48.496° N., 122.074° W.
- Depth: 2.4 km
- Magnitude: 2.1 M_L
- *Intensity III:* Sedro-Woolley area.

West Virginia

20 October (G) West Virginia–Ohio border region
- Origin time: 15 13 55.1
- Epicenter: 39.095° N., 81.593° W.
- Depth: 11 km
- Magnitude: 3.1 m_{bLg} (V), 3.4 m_{bLg} (S)
- *Intensity V:*
  West Virginia—Parkersburg, Ravenswood.

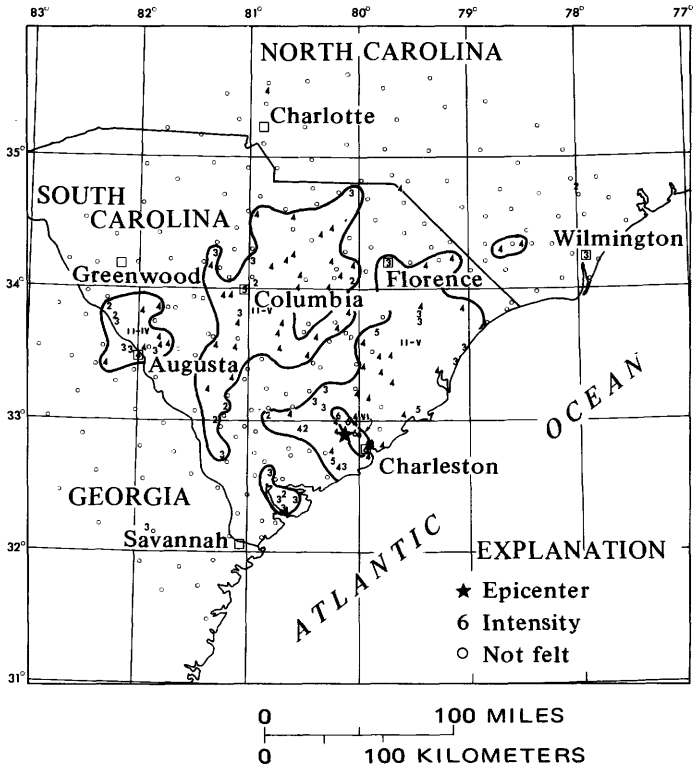

FIGURE 11.—Isoseismals for the eastern South Carolina earthquake of 22 November 1974, 05 25 55.5 UTC.

TABLE 2.—*Summary of macroseismic data for United States earthquakes, October-December 1974*—Continued

West Virginia—Continued

20 October (G) West Virginia-Ohio border region—Con.

Intensity IV:
Ohio—Athens, Belpre, Hocking Port, Nelsonville.
West Virginia—Belleville, New Haven.

Intensity III:
Ohio—Coolville, Hebardville, Pomeroy, Reedsville, Stockport, Vincent.
West Virginia—Cottageville, South Parkersburg.

Intensity II:
Ohio—Stockport.

Wyoming

18 October (G) Yellowstone National Park
Origin time: 06 25 28.1
Epicenter: 44.73° N., 110.74° W.
Depth: 5 km
Magnitude: 4.4 m_b
R. A. Hutchinson of the National Park Service at Yellowstone reported: "During the period of October 18-23 inclusive * * * more than 500 distinct tremors were recorded on the helicorder at the Old Faithful Visitor Center. Approximately 15-20 of these were reported to have been felt at several locations in the park."
Intensity II: Madison Junction.

18 October (G) Yellowstone National Park
Origin time: 06 59 11.5
Epicenter: 44.74° N., 110.74° W.
Depth: 5 km
Magnitude: 3.5 m_b
Intensity II: Madison Junction.

20 October (G) Hebgen Lake Region
Origin time: 02 14 55.0
Epicenter: 44.47° N., 111.01° W.
Depth: 5 km
Magnitude: None computed.
Intensity II: Canyon Village.

22 October (G) Yellowstone National Park
Origin time: 08 43 07.1
Epicenter: 44.74° N., 110.81° W.
Depth: 5 km
Magnitude: 4.6 m_b
Intensity IV: Old Faithful, Madison Junction, Canyon Village.

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 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 amount 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 and level.
Threw objects upward into the air.

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