

SEISMICITY MAP OF THE STATE OF GEORGIA

By

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INTRODUCTION

The earthquake data shown on this map and listed in table 1 are a list of earthquakes that were originally used in preparing the Seismic Risk Studies in the United States (Algermissen, 1969) which have been recompiled and updated through 1977. The data have been reexamined and intensities assigned where none had been assigned before, on the basis of available data. Other intensity values were updated from new and additional data sources that were not available at the time of original compilation. Some epicenters were relocated on the basis of new information. The data shown in table 1 are estimates of the most accurate hypocenter, magnitude, and intensity of each earthquake, on the basis of historical and current information. Known or suspected explosions are listed in table 1 but are not plotted on the seismicity map.

The data in table 1 were used to compile the seismicity map. The latitude and longitude were rounded to the nearest tenth of a degree and sorted so that all identical locations were grouped together and counted. A triangle represents the epicenter plotted to a tenth of a degree. The number of earthquakes at each location is shown on the map by the number to the right of the triangle. A Roman numeral to the left of a triangle is the maximum Modified Mercalli intensity (Wood and Neumann, 1931) of all earthquakes located at that geographic position. The absence of an intensity value indicates that no intensities have been assigned to earthquakes at that location. A year shown below a triangle is the latest year for which the maximum intensity was recorded.

EXPLANATION OF THE TABLES

The data are listed chronologically in table 1 in the following categories: date, origin time, N. latitude, W. longitude, depth, hypocenter quality and referenced data sources, magnitude, and intensity (Modified Mercalli) and intensity source references. Table 1 has some basic limitations in terms of the size (magnitude or intensity) of the earthquakes listed. Prior to 1965 all recorded felt earthquakes are listed, after 1965 only published earthquakes having magnitudes above the 2.5-3.0 range are listed; the lower magnitude levels apply mostly to the eastern United States. The low magnitude events located in recent years with dense seismograph networks have not been included.

Listed below is an explanation of the symbols and codes used in the tables:

- Leaders (..) indicate information not available.
- Latitude and longitude are listed to a hundredth of a degree if they have been published with that degree of accuracy, or greater; however, most historical events have been published only to the nearest degree or tenth of a degree and are therefore listed at this accuracy in table 1. An asterisk (\*) to the right of the longitude indicates that the latitude and longitude were not given in the source references, but were assigned by the compilers of the data file. An (x) to the right of the longitude indicates that the event is an explosion, a suspected explosion, or a nontectonic event; these have not been plotted on the map.
- The letter code in the HYPOCENTER, QUAL column is defined below:
  - Determination of instrumental hypocenters are estimated to be accurate within the ranges of latitude and longitude listed below; each range is letter coded as indicated:

A	0.0°-0.1°
B	0.1°-0.2°
C	0.2°-0.5°
D	0.5°-1.0°
E	1.0° or larger
  - Determination of noninstrumental epicenters from felt data are estimated to be accurate within the ranges of latitude and longitude listed below; each range is letter coded as indicated:

F	0.0°-0.5°
G	0.5°-1.0°
H	1.0°-2.0°
I	2.0° or larger
- The reference identification numbers in the HYPOCENTER, REF and INTENSITY, REF columns indicate the sources of the hypocenter and intensity. They are listed in numerical order in table 2.
- The magnitudes listed under "USGS" are mb values (Gutenberg and Richter, 1956) published in the Preliminary Determination of Epicenters (PDE) by the National Earthquake Information Service, U. S. Geological Survey and predecessor organizations. Associated with the magnitude values listed under "OTHER" are the source code and type. Type is defined by 1 = ML (Richter, 1958), 2 = mbLg (Nuttli, 1973), and 3 = MS (Bath, 1966). The source codes are listed below:  
BLA - Virginia Polytechnic Institute and State University, Blacksburg, Va.  
SLM - St. Louis University, St. Louis, Missouri.
- An asterisk (\*) in the INTENSITY, NM column indicates that the intensity was assigned by the compiler on the basis of the available data at the time the catalog was compiled.

REFERENCES

Algermissen, S. T., 1969, Seismic risk studies in the United States: Fourth World Conference on Earthquake Engineering, Santiago, Chile, January 13-18, 1969, Proceedings, v. 1, p. 14-27.  
Bath, Mark, 1966, Earthquake energy and magnitude, in v. 7 of Physics and chemistry of the Earth: Oxford and New York, Pergamon Press, p. 115-165.  
Gutenberg, B. and Richter, C. F., 1956, Magnitude and energy of earthquakes: Annali di Geofisica, v. 9, no. 1, p. 1-15.  
Nuttli, O. W., 1973, Seismic wave attenuation and magnitude relations for eastern North America: Journal of Geophysical Research, v. 78, no. 5, p. 876-885.  
Richter, C. F., 1958, Elementary Seismology: San Francisco, Calif., W. H. Freeman and Co., Inc., 768 p.  
Wood, H. O., and Neumann, F., 1931, Modified Mercalli Intensity Scale of 1931: Seismological Society of America Bulletin, v. 21, no. 4, p. 277-283.

Table 1.—Chronological listing of Earthquakes for the State of Georgia

DATE YEAR MONTH DAY	ORIGIN TIME(UTC) H M S	LAT. (N.)	LONG. (W.)	DEPTH (KM)	HYPOCENTER		MAGNITUDE USGS OTHER	INTENSITY MM REF	
					QUAL	REF			
1826 OCT 15	.. .. .	32.0	81.1 *	..	H	84	..	..	..
1872 JUN 17	20 00 ..	33.1	83.3	..	G	38	..	..	V 38
1875 JUL 28	23 05 ..	33.1	83.3	..	H	86	..	..	III 86
1875 NOV 02	02 55 ..	33.8	82.5	..	G	38	..	..	VI 38
1884 MAR 31	10 00 ..	33.1	83.3	..	H	86	..	..	III 86
1885 OCT 17	22 30 ..	33.0	83.0	..	H	86	..	..	IV 86
1903 JAN 24	01 15 ..	32.1	81.1	..	G	38	..	..	VI 38
1909 OCT 08	10 00 ..	34.9	85.0 *	..	H	84	..	..	V* 84
1912 JUN 20	.. .. .	32.0	81.0	..	H	38	..	..	V 38
1912 OCT 23	01 15 ..	32.7	83.5	..	H	84	..	..	IV 84
1913 MAR 13	05 .. .	34.5	85.0	..	I	103	..	..	IV 103
1914 MAR 05	20 05 ..	33.5	83.5	..	G	38	..	..	VI 38
1928 MAY 23	10 15 ..	30.8	83.3	..	H	01	..	..	III* ..
1933 JUN 09	11 30 ..	33.3	83.5 x	..	H	86	..	..	IV 102
1943 JUL 29	04 30 ..	33.4	82.0 x	..	H	16	..	..	III* ..
1958 APR 08	17 .. .	31.5	83.5	..	H	29	..	..	III* ..
1963 OCT 08	06 01 43.4	33.9	82.5	..	C	110	..	..	..
1964 FEB 18	09 32 11.6	34.8	85.5 015	B	35	4.4	..	..	V 35
1964 MAR 07	18 03 00.1	33.9	82.5	..	C	110	..	..	..
1964 MAR 13	01 20 18.1	33.2	83.4	..	B	35	4.4	..	V 35
1965 APR 07	07 41 10.2	33.9	82.5	..	C	110	..	..	..
1965 JUL 22	23 55 33.3	33.2	83.2	..	C	115	..	..	..
1965 NOV 08	12 58 01.0	33.2	83.2	..	C	115	..	..	..
1965 NOV 08	13 04 11.5	33.2	83.2	..	C	115	..	..	..
1969 MAY 05	17 14 ..	33.9	82.5	..	H	86	..	..	..
1969 NOV 04	18 58 23	33.2	83.2	..	C	115	..	..	..
1969 NOV 08	01 52 ..	33.9	82.5	..	C	115	..	..	..
1971 APR 16	07 31 ..	33.9	82.5	..	B	110	..	..	..
1973 OCT 08	13 38 ..	33.9	82.5	..	B	110	..	..	..
1974 AUG 02	08 52 09.8	33.87	82.49 001	B	93	4.3	4.8-4.9 2	VI	93
1976 DEC 27	06 57 13.9	32.22	82.46 005	A	95	..	3.7BLA 2	V	95

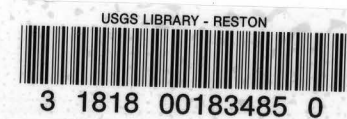
Table 2.—List of data sources

- Heck, N. H. and Bodle, R. R., 1930, United States Earthquakes 1928, U. S. Department of Commerce, Coast and Geodetic Survey, Serial No. 483, p. 1-28.
- Bodle, R. R., 1945, United States Earthquakes 1943, U. S. Department of Commerce, Coast and Geodetic Survey, Serial No. 672, p. 1-47.
- Brazee, R. J. and Cloud, W. K., 1958, United States Earthquakes 1956, U. S. Department of Commerce, Coast and Geodetic Survey, p. 1-78.
- Lander, J. F. and Cloud, W. K., 1964, United States Earthquakes 1962, U. S. Department of Commerce, Coast and Geodetic Survey, p. 1-114.
- Coffman, J. L. and von Hake, C. A., 1973, Earthquake History of the United States, U. S. Department of Commerce, National Oceanic and Atmospheric Administration, No. 41-1 (through 1970), p. 1-208.
- Woolard, G. P., 1968, A catalogue of earthquakes in the United States prior to 1925, based on unpublished data compiled by Harry Fielding Reid and unpublished sources prior to 1930, Hawaii Institute of Geophysics, University of Hawaii, Data Report No. 10.
- Bollinger, G. A., 1975, A catalogue of southeastern United States earthquakes 1754 through 1974, Department of Geological Science, Virginia Polytechnic Institute and State University, Research Bulletin 101, p. 1-68.
- Stover, C. W., Simon, R. B. and Person, W. J., 1976, Earthquakes in the United States, July-September 1974, U. S. Department of Interior, Geological Survey Circular 723-C, p. 1-10.
- Minsch, J. H., Stover, C. W., Person, W. J. and Simon, R. B., 1978, Earthquakes in the United States, October-December 1976, U. S. Department of Interior, Geological Survey Circular 766-D, p. 1-38.
- Georgia Power Company, 1968, part II, section B of Preliminary Safety Analysis Report, Edwin A. Hatch nuclear power plant, unit 1, Docket No. 50-231, Nuclear Regulatory Commission, Public Documents Room, p. A2-36 - A2-41.
- McClain, W. C. and Meyer, O. W., 1970, Seismic history and seismicity of the southeastern region of the United States, Oak Ridge National Laboratory, Union Carbide Corporation, Oak Ridge, Tenn., for the U. S. Atomic Energy Commission, p. 1-43.
- Denman, H. E. Jr., 1974, Implications of seismic activity at the Clark Hill Reservoir, Masters Thesis, Georgia Institute of Technology, p. 1-103.
- Long, L. T., (in progress), Summary of the historical seismicity of the Wallace Dam area, attachment to the quarterly report on seismic monitoring, Georgia Institute of Technology.



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