

### 3.0 HISTORICAL CATALOG

The chronologic listing of earthquake reports prior to the year 1900 has been compiled from published literature and existing catalogs. For those earthquakes included in the historical catalog (Table 2.5A-2), each has been assigned a unique catalog number. There can be several entries for a single event (catalog number) with conflicting dates or locations. The preferred date is listed first in such cases, while alternate or questionable dates or locations are enclosed in parentheses. Typical causes for the multiple entries are changes in dates and descriptions that have occurred as later authors copied or interpreted older historical documents, or when conversions from one calendar to another were involved. This catalog presents the most probable sequence of earthquakes in time and space for the region of Israel. The historical accuracy of the dates of the earthquakes was a goal during the compilation of the catalog but not a topic for research. In many cases, the existing references do not provide an adequate basis for choosing the correct data, and the choice was made based on best judgment. Correct dates were not

considered critical to this study; however, the number of earthquakes significant to the site and their sources were necessary for an accurate assessment of the seismicity. The sources for individual elements in the catalog have been referenced in the list. Values assigned during the compilation of Table 2.5A-2 in order to estimate the distance to the site and the maximum site intensity are also identified. Some of the locations and epicentral intensities assigned for this purpose were default values that were used whenever the information was too sparse to provide a direct estimate of the location or maximum intensity. For example, the Dead Sea Fault system was used as a default location for an unknown location in Israel, and intensity VI (MM) was used for the default epicentral intensity of earthquakes that had no apparent damage (VI is the threshold level for damage). A distance of 70 km approach of the Dead Sea Fault zone to the site was used.

The historical catalog (Table 2.5A-2) includes only earthquakes that were felt strongly in Israel and had the potential to be felt or cause damage at Shvta site (MM III or greater). Several earthquakes have been included that had significant tsunami reports on the Israel coast, but appear to have been too distant to have caused damage in Israel. Many older earthquakes that were too tersely described for evaluation and simply say "Palestine" or "felt in Israel" may have produced MMI III effects at the site and have been included in the historical catalog.

The Modified Mercalli intensities at the site from historical earthquakes reported, have been estimated conservatively in view of the uncertainties of both the epicentral locations and the maximum epicentral intensities. Epicentral distances to the site have been measured from the source areas of the earthquakes, based on the probable segmentation of the faults in the Rift Zone or the location of the offshore tectonic province boundary at the base of the continental slope.

In order to assess the maximum intensity effects at the site from historical earthquakes, MM intensity and magnitude-attenuation curves discussed in Appendix 2.5-I of the PSAR were employed (Figure 2.5A-1). Estimated magnitudes and epicentral intensities of the events were used to estimate the intensities expected at the site and this provided the basis for compiling Table 2.5A-2. Several large historical earthquakes have been reported to occur in the vicinities of Cairo and Alexandria in Egypt that were not included in the catalog (Table 2.5A-2). Given their respective distances to the site of approximately 325 and 440 km, the earthquakes would have had to exceed  $M_w$  7 (or MM X) near Cairo and  $M_w$   $7\frac{1}{2}$  (or MM X-XI) near Alexandria to produce MM III effects at the site.

### **3.1 Completeness of the historical catalog**

The historical record suffers from several weaknesses that to some extent, offset each other. First, because of inadequate reporting during some historical periods and political administrations, it is possible that a few large earthquakes may not have been recorded, or may have been disguised under a simple description such as "Palestine." Secondly, because of the occasional practice of coalescing earthquake felt reports from different areas and different events into one annual administrative report, a single large earthquake may actually have been several smaller earthquakes. However, because of the more than 2,000 years of historical record, Table 2.5A-2 is considered adequate for the determination of the maximum magnitudes and rates of occurrence of large earthquakes in this region.

## **4.0 THE RELATIONSHIP OF TSUNAMIS AND EARTHQUAKES**

Tsunamis, or seismic sea waves, are caused by a displacement of the sea floor accompanying an earthquake. The waves propagate away from the source area at velocities of several hundred kilometers per hour in the deep ocean or sea, with very long wavelengths (hundreds of kilometers) and small amplitudes (meters). On approaching a shelving coastline, the waves slow down, shorten in wavelength, and can increase dramatically in amplitude (wave height above mean sea level). The first arriving wave can either be a recession or an advancing wave crest or floor. Typical wave periods are 10 to 15 minutes.

Usually, the seafloor displacement is directly caused by a block motion of the earth's crust in the epicentral region. Consequently, the presence of a tsunami usually points to a marine epicenter. There are rare instances, however, where submarine landslides are known to have triggered tsunamis. A tsunami associated with a landslide can be very large, close to its origin, but the amplitude normally dissipates rapidly away from the source.

Approximately fifteen percent of all of the regional historical earthquakes in Table 2.5A-2 are reported to have generated tsunamis including a majority of the largest magnitude earthquakes. The occurrence of tsunamis would strongly favor offshore source areas for these earthquakes. A factor that complicates the assignment of epicentral locations to historical earthquakes is apparent in a recent study. Striem (1986) showed that earthquakes on the Jordan-Dead Sea rift have significant amplifications of ground motions on the western flank of the Judean hills and in some areas near the Mediterranean coast, as well as in portions of the Rift Zone itself. As a consequence, marine epicenters can produce rather similar isoseismal patterns as earthquakes in the Rift Zone. It is particularly difficult to distinguish between the two sources when there is an inadequate density of felt reports.

Nevertheless, the assignment of marine epicenters to all of the earthquakes associated with tsunamis is not easily reconciled with what is known of the tectonic elements in the region. A major offshore tectonic structure would be required where none has been recognized (Rotstein, personal communication, 1986). Also, almost all of the major earthquakes and their associated strain relief would be away from the Rift Zone, which is recognized as the most active tectonic feature in the region.

The earthquake of 1759 (Ambraseys and Melville, 1985) provides some definitive epicentral information that indicates tsunamis in this region can be associated with inland epicenters. The earthquake in 1202 had a similar isoseismal distribution as the earthquake of 1759, and was also accompanied by a significant tsunami. Ambraseys cites documentation of a 95 km-long fault rupture on the west side of the Beka'a valley during the 1759 earthquake. Consequently, in the case of the 1759 earthquake (and by analogy the 1202 earthquake), the most probable source for the tsunami must have been a submarine slide triggered by the earthquake.

Mart and Eisen (1982) suggest that the poorly consolidated materials of the Yafo formation resting on the evaporate layers of the Mavqu'im formation are the most likely candidates for slide materials and glide planes. These formations crop out on the flank of the steep continental slope off of the Levantide coast. Numerous bathymetric disturbances associated with slumping have been observed along the coast of Israel (Almagor and Garfunkel 1979; Garfunkel et al., 1979). Striem and Miloh (1976) have assessed that the slide dimensions associated with these disturbances are capable of generating tsunamis. In light of the favorable submarine slide conditions along the Levantine coast, it has been assumed in Table 2.5A-2 that the larger magnitude events with reports of tsunami were located on the Rift Zone when the tsunami reports appear to be localized. In addition to the earthquakes of 1202 and 1759, the earthquakes of 746, 1033, 1068 and 1546 have been assigned a location on the Rift Zone for this reason. The earthquakes on July 9, 551 and August 8, 1303 were left in the Mediterranean because of the large areal extent of the tsunami reports.

## REFERENCES FOR 2.5A

- Almagor, G. and Garfunkel, A., 1979, Submarine slumping in the continental margin of Israel and northern Sinai, *Bulletin of the American Association of petroleum Geologists*, v. 63, pp. 324-340.
- Ambraseys, N.N., 1961, On the seismicity of the southwest Asia, data from a XV century Arabic manuscript, *Revue pour l'Etude des Calamités*, no. 37, *Bulletin de l'Union Internationale de Secours*, Geneva.
- Ambraseys, N.N., 1962a, A note on the chronology of Willis' list of earthquakes in Palestine and Syria, *Bulletin of the Seismological Society of America*, v. 52, pp. 77-80.
- Ambraseys, N.N., 1962b, Data for the investigation of the seismic waves in the eastern Mediterranean, *Bulletin of the Seismological Society of America*, v. 52, pp. 895-913.
- Ambraseys, N.N., 1975, Sources of the sea waves on the Israel coast, letter to Dr. J. Steinback, Sargent and Lundy Engineers.
- Ambraseys, N.N., and Melville, C.P., 1985, An analysis of eastern Mediterranean earthquake of 10 May 1202, proceedings of the Symposium on Historical Seismograms and Earthquakes, IASPEI/UNESCO Working Group on Historical Earthquakes, Tokyo, W.H.K. Lee, Ed.
- Amiran, D.H.K., 1951, A revised earthquake catalog of Palestine, *Israel Exploration Journal*, v. 1, pp. 223-246.
- Arieh, E.J., 1967, Seismicity of Israel and adjacent areas, *Geological Survey of Israel Bulletin*, no. 43-1967, pp. 1-14.
- Arieh, E.J., 1975, Historical earthquakes, Draft preliminary Safety Analysis Report for proposed nuclear power plant at Nitsanim site, Section 2.5.2.5.7, Israel Electric Company.
- Arieh, E., Artzi, D., Benedik, N., Eckstein, A., Issakow, R., Reich, B., and Shapira, A., 1985, Revised and updated catalog of earthquakes in Israel and adjacent areas 1900-1980, IPRG Report Z6/1216/83(3).
- Ambraseys, N.N. and Barazangi, M., 1989, The 1759 in the Bekaa Valley; Implications for earthquake hazard assessment in the eastern Mediterranean region, *JGR*, v. 94, no. B4, pp. 4007-4013.
- Ambraseys, N.N., and Melville, C.P., 1989, Evidence for Intraplate Earthquakes in Northwest Arabia, *Bulletin of the Seismological Society of America*, v. 79, no. 4, pp. 1279-181.
- Arieh, E.J., 1977, An evaluation of six significant historical earthquakes, *Geological Survey of Israel (draft)*.
- Ben-Menahem, A., 1977, Earthquake catalog for the Middle East (92 B.C.-19080 A.D.), *Bollettino di Geofisica Teorica ed Applicata*, v. XXi, pp. 245-313.
- Ben-Menahem, A., and Abbodi, E., 1981, Micro- and macroseismicity of the Dead Sea Rift and off-coast eastern mediterranean, *Tectonophysics*, v. 80, pp. 199-233.
- Ben-Menahem, A., Nur, A., and Vered, M., 1976, Tectonics, seismicity and structure of the Afro-Eurasian junction - The breaking of an incoherent plate, *Physics of the Earth and Planetary Interiors*, v. 12., pp. 1-50.
- Ben-Menahem, A., Vered, M. and Brooke, D., 1982, Earthquake risk in the Holy Land, *Bollettino di Geofisica Teorica ed Applicata*, v. XXIV, pp. 175-103.

- Burstein, e., 1974, Earthquakes in Israel - Translation of historical sources, Draft PSAR for proposed nuclear power plant at Nitsanim site.
- Garfunkel, Z., Arad, A. and Almagor G, 1979, The Palmahim disturbance and its regional setting, Geologic Survey of Israel, Bulletin no. 72.
- Kanamori, H., 1983, Magnitude scale and quantification of earthquakes, Tectonophysics, v. 93, pp. 185-199.
- Maamoun, M., 1979, Macroseismic observations of principal earthquake in Egypt, Heiwan Institute of Astronomy and Geophysics Bulletin 184, 12 p.
- Mallette, R., 1953, Third report on the facts of earthquake phenomena, report of the twenty-second meeting, British Association for the Advancement of Science, London, 177 p.
- Mart, Y. and Eisen, B., 1982, Some faulting patterns along the continental slope of Israel and their tectonic significance, Marine Geophysical Researches, v. 5, pp. 249-262.
- Melville, C.P., 1984, Unpublished manuscript on the seismicity of the Gulf of Suez, provided by N. N. Ambraseys.
- Milne, J., 1981, Catalogue of destructive earthquakes, British Association for the Advancement of Science, Portsmouth Meeting, 1911, Appendix I, pp. 644-740.
- Perry, A., 1850, Mémoires Couronnes et Mémoires des Savants Etrangers, L'Académie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique, Tome XXIII 1848-1850, 73 p.
- Plassard, J. and Kigoj, B., 1962, Catalogue des séismes ressentis au Liban, Annales-Mémoires de l'Observatoire de Ksara, Tome IV, Cahier 1.
- Plassard, J. and Kigoj, B., 1968, Catalogue des séismes ressentis au Liban, Annales-Mémoires de l'Observatoire de Ksara, Tome IV, Cahier 1 (Second Edition).
- Poirier, J.P. and Taher, M.A., 1980, Historical seismicity in the Near and Middle East, North Africa, and Spain from Arabic documents (VIIth-XVIIIth century), Bulletin of the Seismological Society of America, v. 70, pp. 2185-2201.
- Riad, S. and Meyers, H., 1985, Earthquake catalog for the Middle East countries, 1900-1983, World Data Center A for Solid Earth Geophysics, Report SE-40, U.S. Department of Commerce, 127 p.
- Rotstein, Y. and Ariei, E., 1986, Tectonic implications of recent earthquake data from Israel and adjacent areas, Earth and Planetary Science Letter, v. 78, pp. 237-244.
- Russell, K.W., 1980, The earthquake of May 19, A.D. 363, Bulletin of the American School of Oriental Research, no. 238, pp. 47-64.
- Sharon, M., 1976, Earthquakes in Syria and Palestine in the years 1033, 1068, 1201, 1202, 1203-4, 1293, 1303, according to Arabic sources, Institute of Asian and African Studies, the Hebrew University.
- Smith, G.A., 1972, Jerusalem, the topography, economics and history from the earliest times to A.D. 70, Library of Biblical Studies, Volume I, pp. 53-74.
- Sprenger, A., 1843, Ad-Soyutis work on earthquakes, Journal of the Asiatic Society, no. 141, pp. 741-749.

- Striem, H.L., 1986, Macroseismic effects in Israel due to earthquakes in the nineteen fifties: Institute for Petroleum Research and Geophysics, Report no. Z1/567/79(43), January.
- Striem, H.L. and Miloh, T., 1976, Tsunamis induced by submarine slumpings off the coast of Israel, International Hydrographic Review (Monaco), v. LIII, pp. 41-55.
- Van Hoff, K., 1840, Chronik der Erdbeben and Vulkan-Ausbruche: Theil I, Gotha, 470 p.
- Vered, M. and Striem, H.L., 1977, A macroseismic study and the implications of structural damage of two recent earthquakes in the Jordan Rift, Bulletin of the Seismological Society of America, v. 67, pp. 1607-1613.
- Willis, B., 1928, Earthquakes in the Holy Land, Bulletin of the Seismological Society of America, v. 18, pp. 72-103.
- Willis, B., 1932, Earthquakes in the Holy Land - a correction, Bulletin of the Seismological Society of America, v. 23, pp. 88-89.

## REFERENCES - CODED NUMERICALLY

1. Seismological Division, Institute for Petroleum Research and Geophysics, (E. ArieH) and Woodward-Clyde Consultants (T. Turcotte).
2. Ambraseys (1962a).
3. Ambraseys (1975).
4. Ambraseys (1975).
5. ArieH (1967).
6. ArieH (1975).
7. Ben Menahem (1979).
9. Ben Menahem et al (1976).
10. Ben Menahem et al (1982).
11. Burstein (1974).
12. Plassard and Kogoj (1968).
13. Plassard and Kogoj (1962).
14. Poirier and Taher (1980).
15. Sharon (1976).
16. Willis (1928).
17. Willis (1932).
18. Russel (1980).
19. ArieH (1977).
20. Sieberg (1932).
21. Ambraseys (1985).
22. Ambraseys (1961).
23. Ambraseys (1962b).
24. Melville (1984).
25. Maamoun (1978).
26. Smith (1972).
27. Milne (1912).
28. Von Hoff (1840).
29. Mallet (1853).
30. Perrey (1852).
31. Sprenger (1843).
32. Ambraseys and Melville (1989).



Table 2.5A-2  
CATALOG OF HISTORICAL EARTHQUAKES  
IN AND AROUND ISRAEL  
(31 BC to 1900 AD)

Note: Conservative estimates of intensities, magnitudes and locations are used in this table when other sources of information are unavailable or in cases where the available information is judged to be inadequate. Therefore, this table should not be used for estimating site intensity recurrence.

CAT	EARTHQUAKE SOURCE EVALUATION				SITE INFORMATION					
NO.	DATE	EPICENTRAL INTENSITY		LOCATION		EARTHQUAKE SIZE		MINIMUM * DISTANCE TO SITE		COMMENTS
		I0 (MM)	REF	LOCATION	REF	MAG	REF	DIST (km)	IS (MM)	
1	2 SEP 31 BC	IX	1	JORDAN VALLEY	7	7.0	7	125	V-VI	<div></div>
2	26 to 20 BC			EASTERN MEDITERREAN	1	7±	1	400	III	
3	19 AD	IX-X	7	OFF COAST OF SIDON	7	6.8	7	300	III	MAY BE SAME AS 48±
4	30 to 33	VI±	1	DEAD SEA FAULT ZONE	1			70	III	
5	48±	IX	1	ARAVA FAULT	7	6.2	7	65	VI	
6	115			SYRIAN COAST	1	7±	1	530	<III	
7	128	≥ VIII	1	BEKA'A				300	<III	
8	306 TO 308	X	7	OFF COAST SUR	7	7.1	7	200	IV-V	
9	363 MAY 19 (362 MAY 24)	IX	1	JORDAN VALLEY (EAST OF THE LISAN)	1 7	7.0 6.4	1 7	125 70	V-VI (VI-VII)	
10	394	VI±	1	DEAD SEA FAULT ZONE	1			70	III	
11	396	VI±	1	DEAD SEA FAULT ZONE	1			70	III	
12	415 SEP	VI±	1	DEAD SEA FAULT ZONE	1			70	III	QUESTIONABLE EVENT
13	419	IX	1	NEAR SAFED	7	6.2	7	230	III	
14	498 SEP	IX	1	JORDAN VALLEY?	1			125	IV-V	PROBABLY IN N. TURKEY

\* Estimated intensity if event at minimum distance.

Table 2.5A-2  
CATALOG OF HISTORICAL EARTHQUAKES  
IN AND AROUND ISRAEL  
(31 BC to 1900 AD)  
(Continued)

CAT	EARTHQUAKE SOURCE EVALUATION				SITE INFORMATION					COMMENTS	
	NO.	DATE	EPICENTRAL INTENSITY		LOCATION		EARTHQUAKE SIZE		MINIMUM * DISTANCE TO SITE		
			I0 (MM)	REF	LOCATION	REF	MAG	REF	DIST (km)		IS (MM)
	15	502 AUG 19.	X	7	OFF COAST OF ACRE	7	7.0	7	200	IV-V	
	16	551 JUL 9	XI-XII	7	OFF COAST OF BEIRUT	7	7.8	7	340	V	
	17	580	VI±	1	DEAD SEA FAULT ZONE?	1			70	<III	]
	18	631 or 632		1	DEAD SEA FAULT ZONE	1	≤ 5.8	1	70	≤ VI	
	19	637	VI±	1	GAILEE/BEIT SHAN VALLEY?		1		190	<<III	
	20	641	VI±	1	GAILEE/BEIT SHAN VALLEY?		1		190	<<III	MAY BE SAME EVENT AS 637
	21	658 JUN			NEAR BEIT SHAN	1	6.6	7	190	IV	
	22	659-660	VIII	1	DEAD SEA FAULT ZONE	1			70	IV-V	]
	23	672	VII	6	OFF COAST SOUTHERN ISRAEL	1			110	<III	
	24	ca 710	VIII	1	JORDAN VALLEY?	1			125	IV	
	25	?738 JAN 16	VI±	1	JORDAN VALLEY?	1			125	<<III	QUESTIONABLE EVENT
	26	746 JAN 18	XI	7	JORDAN VALLEY	7	7.3	7	125	VII	
	27	756	VIII	6	DEAD SEA FAULT ZONE	6			70	IV-V	]
	28	765 MAY 3	IX	1	BEKA'A	1			300	III	

\* Estimated intensity if event at minimum distance.

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CATALOG OF HISTORICAL EARTHQUAKES  
IN AND AROUND ISRAEL  
(31 BC to 1900 AD)  
(Continued)

CAT	EARTHQUAKE SOURCE EVALUATION				SITE INFORMATION				COMMENTS	
NO.	DATE	EPICENTRAL INTENSITY		LOCATION		EARTHQUAKE SIZE		MINIMUM * DISTANCE TO SITE		
		I0 (MM)	REF	LOCATION	REF	MAG	REF	DIST (km)		IS (MM)
29	775 to 795	IX	1	JORDAN VALLEY	1			125	V	MULTIPLE EVENTS?
30	808	VI±	1	DEAD SEA FAULT ZONE	1			70	III	
31	828	VI±	1	DEAD SEA FAULT ZONE	1			70	III	
32	853-854	X-XI	1	GALILEE	1			190	VI	
33	859 APR 8	XII	7	NORTHERN LEVANT FAULT ZONE	7	8.0	7	400	V	
34	881			OFF COAST OF ACRE	7	6.5	7	200	V	
35	991 APR 5	IX-X	7	THE BEKA'A	7	6.1	7	300	IV	
36	1002	≥ VIII	1	JORDAN VALLEY(?)	4			125	IV	
37	1016	IX	1	JORDAN VALLEY	1			125	IV-V	
38	1033 DEC 10 (1032 MAR 6)	XI	1	JORDAN VALLEY	1	7.5	1	125	VII	
				(OFF COAST SOUTHERN ISRAEL)	7	6.9	7	110	(VI)	
				(DEAD SEA FAULT ZONE)	7	6.5	7	70	(VI-VII)	
				(OFF COAST ACRE)	7	6.2	7	200	(III-IV)	
39	1035	VI±	1	DEAD SEA FAULT ZONE	1			70	III	
40	1060			DEAD SEA FAULT ZONE	7	6.1	7	70	VI	
41	1067 APR 20			ARAVA FAULT	7	6.5	7	65	VI-VII	

\* Estimated intensity if event at minimum distance

Table 2.5A-2  
CATALOG OF HISTORICAL EARTHQUAKES  
IN AND AROUND ISRAEL  
(31 BC to 1900 AD)  
(Continued)

CAT		EARTHQUAKE SOURCE EVALUATION				SITE INFORMATION				
NO.	DATE	EPICENTRAL INTENSITY		LOCATION		EARTHQUAKE SIZE		MINIMUM * DISTANCE TO SITE		COMMENTS
		I0 (MM)	REF	LOCATION	REF	MAG	REF	DIST (km)	IS (MM)	
42	1068 MAR 18			ARABIA (HEJAZ)	32	≈7.0	32	300	<III	]
	(1067)			(ARAVA FAULT)	10	≥ 6.0	10	65	(VI-VII)	
	(1068 MAR 18)			(OFF COAST SOUTHERN ISRAEL)	7	7.0	7	110	(VI)	
43	1070 FEB 25			OFF COAST SOUTHERN	1	<6.7	1	110	<VI	MAGNITUDE ASSUMES NO ISRAEL? TSUNAMI FROM A MARINE EPICENTER
44	?1096	VI±	1	DEAD SEA FAULT ZONE	1			70	III	QUESTIONABLE EVENT
45	1105 DEC 24	VI±	1	DEAD SEA FAULT ZONE	1			70	<III	
	(1105 DEC 24)	VIII	1	(LEVANT SECONDARY F.S.)	1	6.1	7	250	(<III)	
46	1113 JUL 18	VI±	1	DEAD SEA FAULT ZONE	1			70	III	
47	1113 AUG 9	VI±	1	DEAD SEA FAULT ZONE	1			70	III	
48	1117 JUN 26	VIII	1	DEAD SEA FAULT ZONE	1			70	III-IV	
49	1160	VIII	1	NEAR JERICHO	1	5±	1	85	V	
	(1160)			(DEAD SEA FAULT ZONE)	1	6.1	7	70	(VI)	
50	1202 MAY 20	IX	21	JORDAN VALLEY/BEKA'A	21	7.6	21	125	VII	
	(1201 JUL-AUG)	XI	7	(BEKA'A)	7	7.3	7	300	(IV)	
	(1202 MAY 20)			(DEAD SEA FAULT ZONE)	7	6.8	7	70	(VII)	

\* Estimated intensity if event at minimum distance.

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CATALOG OF HISTORICAL EARTHQUAKES  
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(31 BC to 1900 AD)  
(Continued)

CAT	EARTHQUAKE SOURCE EVALUATION				SITE INFORMATION						
	NO.	DATE	EPICENTRAL INTENSITY		LOCATION		EARTHQUAKE SIZE		MINIMUM * DISTANCE TO SITE		COMMENTS
			I0 (MM)	REF	LOCATION	REF	MAG	REF	DIST (km)	IS (MM)	
	51	1212 MAY 2	VIII	1	SOUTH-CENTRAL SINAI	1			240	<III	
	52	1293 JAN OR FEB	IX	1	DEAD SEA FAULT ZONE	6			70	V-VI	
	53	1303 AUG 8	XI	7	OFFSHORE EGYPT	1	7.6	7	350	IV	
	54	1312 MAY 1	VIII	7	SOUTH-CENTRAL SINAI	7	5.8	7	240	<III	
	55	1355	VI±	1	GALILEE/BEKA'A	1			240	<<III	
	56	1366 OCT	VI±	1	GALILEE	1			190	<<III	
	57	1374	VI±	1	GALILEE/BEKA'A	1			240	<<III	
	58	1458-1459	VIII	1	DEAD SEA FAULT ZONE	1			70	IV-V	
	59	1541	VI±	1	DEAD SEA FAULT ZONE	1			70	III	
	60	1546 JAN 14			JORDAN VALLEY	1	7.0	7	125	V-VI	
	61	1546 MAR 15			JORDAN VALLEY	1	6.0	1	125	IV-V	AFTERSHOCK(?) OF JAN 14
	62	1546 MAY 14	≤ VIII	1	JORDAN VALLEY	1			125	III-IV	AFTERSHOCK(?) OF JAN 14
	63	1588 JAN 14	≤ IX	1	SINAI NW ARABIA (HEJAZ)	7 32	≈7.0	32	240 220	<III IV	QUESTIONABLE LOCATION BASED ON SIMILAR FELT REPORTS FROM MAR 31, 1969 M 6.1 EQ IN N. RED SEA

\* Estimated intensity if event at minimum distance.

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CATALOG OF HISTORICAL EARTHQUAKES  
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(31 BC to 1900 AD)  
(Continued)

CAT	EARTHQUAKE SOURCE EVALUATION				SITE INFORMATION						
	NO.	DATE	EPICENTRAL INTENSITY		LOCATION	REF	EARTHQUAKE SIZE		MINIMUM * DISTANCE TO SITE		COMMENTS
I0 (MM)			REF	MAG			REF	DIST (km)	IS (MM)		
	64	1605 JAN 8	≤ IX	1	SINAI	7			240	<III	
	65	1608 DEC 14	≤ IX	1	SINAI	7			240	<III	
	66	1672	≤ IX	1	SINAI	7			240	<III	
	67	1759 OCT 30 (1759 OCT 30)			BEKA'A (SAFED)	7 10	7± 6.5	1 10	300 190	IV-V (IV)	]
	68	1759 NOV 25	X-XI	7	BEKA'A	7	6.8	7	300	III	
	69	1801	≤ IX	1	SINAI	7			240	<III	
	70	1814	X	1	EL-LEDSCHA REGION	20			240	<III	
	71	1834 MAY 23 (1834 MAY 23)	VIII X	6 7	DEAD SEA FAULT ZONE (EAST OF LISAN)	1 7		6.3 7	70 70	IV-V (VI-VII)	
	72	1837 JAN 1	IX	7	NEAR SAFED	7	6.4	7	230	III-IV	
	73	1839	≤IX	1	SINAI	7			240	<III	
	74	1844/1845	VI±	1	DEAD SEA FAULT ZONE	1			70	III	]
	75	1857 SEP 21	VI±	1	DEAD SEA FAULT ZONE	1			70	III	
	76	1859 OCT 24			DEAD SEA FAULT ZONE	1	5.0	10	70	V	
	77	1863 SEP 24	VI±	1	DEAD SEA FAULT ZONE	1			70	III	

\* Estimated intensity if event at minimum distance.

Table 2.5A-2  
CATALOG OF HISTORICAL EARTHQUAKES  
IN AND AROUND ISRAEL  
(31 BC to 1900 AD)  
(concluded)

CAT	EARTHQUAKE SOURCE EVALUATION				SITE INFORMATION						
NO.	DATE	EPICENTRAL INTENSITY		LOCATION		EARTHQUAKE SIZE		MINIMUM * DISTANCE TO SITE		COMMENTS	
		I0 (MM)	REF	LOCATION	REF	MAG	REF	DIST (km)	IS (MM)		
78	1864 MAR 24	VI±	1	DEAD SEA FAULT ZONE	1			70	III		
79	1868 JAN 24	VI±	1	DEAD SEA FAULT ZONE	1			70	III		
80	1868 FEB 19	VI±	1	DEAD SEA FAULT ZONE	1			70	III		
81	1868 OCT 7	VI±	1	DEAD SEA FAULT ZONE	1			70	III		
82	1870 JUN 24	VIII	1	OFF COAST NORTHERN EGYPT	4			370	<<III		
	(1870 JUN 24)	X-XI	7	(NILE CONE)	7	7.2	7	370	(III)		
83	1873 FEB 14			OFF COAST TYRE	10	6.2	10	200	III-IV		
84	1873 JUN 29	VI±	1	DEAD SEA FAULT ZONE	1			70	III		
85	1874 MAR 3	VII	1	DEAD SEA FAULT ZONE	1			70	<III		
86	1877 FEB 15	VI±	1	DEAD SEA FAULT ZONE	1			70	III		
87	1877 MAR 14	VI±	1	DEAD SEA FAULT ZONE	1			70	III		
88	1879 DEC 31	VI±	1	DEAD SEA FAULT ZONE	1			70	III		
89	1885 MAR 13	VI±	1	DEAD SEA FAULT ZONE	1			70	III		
90	1889 DEC 11	VI±	1	DEAD SEA FAULT ZONE	1			70	III		
91	1893 JAN 12	VI±	1	DEAD SEA FAULT ZONE	1			70	III		

\* Estimated intensity if event at minimum distance. ☐

**TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS**

CAT. NO	REF.	DATE	COMMENTS
1	16	33-32 BC	"Palestine: 30,000 men lost their lives".
	13	33-31 BC	"Epicenter near Wadi-Faraa. Destruction in Judea and in Galilee."
	7	31 BC Sep 02	"Great destruction and numerous casualties in Judea, Qumran, Massada and... Jericho."
	4	31 BC	"Severe in Galilee. Moderate in Jerusalem. Probably many thousand killed."
	6	31 BC	"The earthquake epicenter was probably in the Jordan-Dead Sea Rift and its highest intensity - about IX..."
	9	31 BC	"...an earthquake in Judea... brought a great destruction on the cattle in that country. About 10,000 men also perished by the fall of houses..."
	11	31 BC	Same quote as ref. 9 except "...about 30,000 persons also perished..."
	16	31 BC	"Judea: Jerusalem, Jordan Valley."
	20	31 BC Spring	"Severe earthquake in Galilee... felt at least to beyond Jerusalem... said that Chammath (Tiberias) was destroyed... Many dead (10,000) and injured."
2	9	26-20 BC	"Flooding at Pelusium. Submarine epicenter."
	16	26 BC	"Cyprus"
	16	24 BC	"Egypt, palestine: Pelusium, Cassium".
3	7	19 AD	"Destruction at Sidon, felt in Israel, Syria, Asia Minor."
	9	19 AD	Similar to Ref. 7.
	12	19 AD	"Strong at Sidon."
	13	19 AD	"Destructive at Sidon."
	16	19 AD	"Asia Minor, Syria and Palestine: Sidon, thirteen cities of the Bithynie; long duration."
	20	19 AD	"Earthquake at Sidon."
4	20	30 Apr 7 and 9	"The earthquakes that were brought to attention by Jesus Christ's death and resurrection caused only light damage and fissuring in the region of Jerusalem."
	4	30	"Jerusalem, slight."



TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS

CAT. NO	REF.	DATE	COMMENTS
	9	30	Date only.
	4	33	"Judea, Jerusalem, slight damage to the Temple."
	12	33	"Destruction on the shores of the Dead Sea, at Qumran."
	16	33 AD	"Bythinie, Judea: Jerusalem."
5	7	9 BC to 50 AD	(Perhaps 48 AD). "Structures at the Nabatian Temple at Aram (Gebel E-Ram, 40 km east of Akaba, built ca 31-16 AD), fortified to withstand earthquakes. Same at Tel-El Haleifa, near Eilat, and at Petra."
	4	48 AD	Similar to Ref. 16.
	16	48 AD	"Palestine: Jerusalem; light."
	20	48	"Houses in Jerusalem suffered damages from an earthquake in Judea."
6	7	115 Dec 13	"Felt all over the near east and the eastern Mediterranean up to Rhodes..."
	9	115 (Dec 13)	"Destruction of Antioch, Caesaria and Yavne hit by a tsunami..."
	12, 13	115 Dec 13	"Three fourths of Antioch destroyed; numerous deaths; the emperor Trajan sought refuge in the circus."
	20	115 Dec 13	"In the night before the cockscrow. An earthquake devastated three quarters of Antiochia, Trajan Caesar fled into the circus; 1,600 dead. Moreover, Elea, Myrina and Pitana were named as totally destroyed. A large felt region, reaching at least to Rhodes."
	16	115	"Syria: Antioch; great catastrophe, 260,000 victims."
7	13	128	"Syria and Palestine, strong at Caesarea and Nicopolis."
	16	128	"Syria and Palestine: Nicopolis, Caesarea; strong."
	6	130 (or 128)	"...affected strongly Caesarea, Lydda and Emmaus..."
8	4, 9, 16	306	"Destruction at Tyre and Sidon. Tsunami."
	20	306	"In winter. Strong earthquake in Syria, that particularly plagued Tyre and Sidon with destruction. Also felt in Jerusalem."
	7, 12, 13	306 (or 308)	"Destruction at Sur and Sidon. Felt in Jerusalem. Tsunami at Caesaria."
	20	308	"Harmless earthquake at Caesaria with seismic waves."

CAT. NO	REF.	DATE	COMMENTS
9	7	362 May 24	"Tsunami in the Dead Sea. Destruction of Rabbath Moab (Aeropolis) and Kir-Hareset (El-Kerak). Damage to the Temple area in Jerusalem."
	20	362 before Jun	"Severe earthquake on the east bank of the Dead Sea (Bahir Lut) that overflowed the bank." Similar to Ref. 7.
	4	362	"Palestine; Jerusalem... Nablus, Beit Jibrin, Gaza."
	6	362	"The epicenter was probably in the Dead Sea Rift. The earthquake affected Jerusalem with a probable highest intensity VII..."
	16	362	"Palestine, Syria, Asia Minor: Jerusalem, Nicomedia ruined, several castles in Syria ruined."
	18	363 May 19	Destruction from the northern Galilee through Petra, and from the coastal littoral through the Jordan Valley; Russell argues against 362 date and interprets tsunami reports (in later accounts only) to belong to earthquake of 365 (in northern Mediterranean).
	16	365	"Palestine."
	4	?367?	"General, Jerusalem, damage to the Temple area... doubtful"
10	16	394	"Palestine."
	20	394	"Scattered earthquakes in Palestine."
11	16	396	"Palestine."
	20	396	"Strong earthquake in Antiochia."
12	4	?415	"Hebron: terrible and sudden earthquake. Unconfirmed by other sources."
	11	415 Sep	Similar damage report (also in September) stating "Nicopolis has fallen to the ground."
13	4	419	"Moderate to severe. Destruction of many towns and villages."
	7	419	"Destruction at Khirbet-Shama and Aphek (Antipatris). Felt in Jerusalem."
	12, 13	419	"Destruction in Palestine."
	16	419	"Palestine; cities and villages ruined."
	20	419	"Many towns and villages were destroyed in Palestine. Jerusalem appeared to have suffered no strong shaking."

**TABLE 2.5A-3**  
**ABSTRACT OF FELT DESCRIPTIONS**

CAT. NO	REF.	DATE	COMMENTS
14	6	498 Sep (or 500)	"The earthquake affected Nicopolis (Eminaus)... a monastery was destroyed and some people were buried in the ruins..."
	4	498 Sep	Similar to Ref. 6
	7	500	"Destruction of Antiochia. Damage of Safed... Felt in Turkey and Greece."
	13	500	"Destruction at Antioche; damage to Safed (?)"
	16	500	"Macedonia, Greece, Asia Minor, Syria, Palestine: Edessa; Sleuke, Antioch, Sarde, etc.; big shock."
	20	500	"Heavy earthquake in Syria that reached to Palestine. Severest destruction in Antiochia and Seleucia Pieria (Selukije near El Mughajir), damage in Edessa and Safed."
15	13	501 Aug 19	"Epicenter in the direction of Acre (which was) completely destroyed, Tyr and Sidon partially destroyed."
	11	501-502 (Aug 22)	"...on the same night, in which that great blazing fire appeared, the city of Ptolemais, (Akko) was overturned and nothing in it was left standing... half of their cities fell, namely Tyre and Sidon..."
	9	501	Same as Ref. 4.
	4	502 Aug 19	"Acre destructive; Tyre, Sidon-severe; Beirut-a few houses collapsed."
	6	502 Aug 19 (or 501)	"The earthquake epicenter was probably offshore. The earthquake was very destructive at Acre (intensity VIII-IX)."
	7	502 Aug 21	"Off coast Acre, $I_0 = 10$ . Acre destroyed. Destruction at Sur, Sidon, Beirut (synagogue damaged) and Byblos. Latbrun (Nicopolis) destroyed."
	12	502 Aug 21	Same as Ref. 13.
16	6	551 Jul (6, 7 or 9)	"The earthquake epicenter was probably offshore opposite the Lebanese coast..."
	12, 13	551 Jul 6	"Destruction of Beyrouth, destruction to Tyre, Sidon, Batroun, Tripoli, 101 'towns' destroyed in Lebanon and in Galilee. Tsunami, notably at Beyrouth: The sea retreated for two 'thousand' (meters?). Landslides at 'Lithoprosopon' (Ras-Chekka) into the sea, creating a port near Batroun. At Beyrouth, the fire lasted two months; stones were reduced to lime."
	12	551 Jul 6	" <b>Note:</b> the earthquake of 551 was certainly one of rare violence; it destroyed Beyrouth and the north, Byblos, Botrys, Tripoli. It was less disastrous at Sidon, to where the school of law was transferred, and still less at Tyre. The epicenter (probably) occurred in the sea close to the coast. Historians reported in the same year (or in the year 553 or 554, through error we think) seismic events befalling the Dodecanese (destruction and tsunamis at the island of Cos) and in the Gulf of Corinth, as well as terror to the population of Alexandria. This was probably several earthquakes that occurred one after the other in sequence. Might this be the same as the event of 26 June 1926 whose macroseismic area appeared very large?"

**TABLE 2.5A-3**  
**ABSTRACT OF FELT DESCRIPTIONS**

CAT. NO	REF.	DATE	COMMENTS
	4	551 Jul 7 or 9	"...Tidal wave on Lebanese coast..."
	3	551 Jul 9	"A destructive earthquake in Mesopotamia, Phoenice, Lebanon, and Arabia, Tyros, Sidon, Beyrouth, Tripolis, Byblos, Botrys and the Galilee were seriously damaged and about 30,000 were killed... destructive seismic sea wave..."
	7	551 Jul 9	"Destruction of Beirut. Destruction of Sur, Sidon, Tripoli and Galilee. Felt in Egypt, Arabia and Mesopotamia, Tsunami."
	9	551 Jul 9	"A grand tsunami hits the coast from Tripoli to Caesaria, destruction of Beirut. Sea recedes for two miles. Ras-Chekka submerged."
	20	551 Jul 9	"Scattered earthquake reports in Syria, Palestine, Egypt, Arabia and Mesopotamia. Berytos collapsed to its foundations, causing many deaths; the famous school of law was moved to Sidon temporarily. Berytos never again regained its old splendor, in 600 it still lay in ruins. More or less strong shaking affected the entire coast between tripoli and Tyre. The most distant places, that where named, were Antiochia, Apamea, Bostra and Alexnadria. A seismic wave, beginning with a retreat of 1,000 paces, destroyed numerous ships, in front of the pleistocene region, particularly at Botrys (Batrun)."
	11	551	"...an enormous and terrible earthquake took place in all Palestine, Arabia and Mesopotamia..."
	16	553	"Beyrouth ruined."
	20	553	"Strong earthquakes in Antiochia."
	3	554 Aug 16	"...In fact, certain characteristics of the earthquake described by Cedr. 384/i.674 in 554 Aug 16, belong to the earthquake of 551, particularly the seismic sea wave in the Eastern Mediterranean and the damage it caused in Palestine."
	4	554 Aug	"Cedrenus mentions Palestine, Agathias Beirut."
	7	554 Aug	"Very large shaken area. Felt in Israel and Beirut. Earthquake near Rhodes and eastern Dodecanese."
	16	554	"Greece, Syria, Palestine, mesopotamia, etc: Antioch and other cities."
17	16	580	"Palestine."
	20	580	"An earthquake in Palestine."
18	4	631 or 632	"Shocks continuing for a month" (in Palestine).
	16	631	"Palestine; shocks continuing during thirty days."
	20	632 or 633	"June 8. Start of an earthquake swarm of about a month duration in Palestine and on the eastern side of the Dead Sea. Apparently no damage."

TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS

CAT. NO	REF.	DATE	COMMENTS
	12	635	"Palestine, 30 days of shaking."
19	4	637	"Judea."
	16	637	"Syria and Judea."
20	4	641	"Judea."
	16	641	"Syria and Judea."
21	4	658 Jun	"Moderate to strong" (in Palestine). "Extensive damage."
	7	658 Jun	"Extensive damage in Northern Israel, destruction in Rehov near Beit-Shan."
	12, 13	658 Jun	"Palestine and Syria, 'immense ruination'."
	20	658 Jun	"Destructive earthquake in Palestine, that was also felt at a distance in Syria."
	16	658	"Palestine and Syria; a considerable earthquake, great ruin."
22	4	659/660	"Jericho strong, Khan el Ahmar-Monastery of St. Euthymius destroyed."
	9	659/660	"Destruction in Jericho and vicinity..."
	6	659-660	"The earthquake epicenter was probably in the Dead Sea Rift near Jericho. The earthquake strongly affected Jericho where the monastery of St. Euthymius was destroyed..."
23	4	672	"Gaza, Ascalon, Ramle-strong."
	6	672	"...The epicenter was probably offshore..."
	20	672	"Shaking of the south coast of Palestine up to Gaza (Rasse) and inland as far as Er-Ramle."
24	4	ca. 710	"Jerusalem-damage to mosque el Aska."
	9	710	Same as Ref. 4.
	12	ca. 710	"Fall of the east wall of the el-Aqsa mosque in Jerusalem."
	20	ca. 710	"A strong earthquake in Palestine, that apparently was also felt in Syria and Egypt. At Jerusalem the east wall of the old Aksa mosque on the temple mount Maria collapsed."
25	9	7738 Jan 16	"Very strong. Doubtful."

**TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS**

CAT. NO	REF.	DATE	COMMENTS
26	20	742	"A widely reported earthquake in Egypt, that appeared especially strong in the Saba desert, where numerous villages suffered damage or were even destroyed. The focus of the shocks may be in the central Lybian Saba, todays Oasis Sebcha near Mursuk, rather than the south Arabian Saba that has been questioned."
	3	746 Jan 18	"A destructive earthquake in the region of the Dead Sea and along the Jordan River valley... seismic sea waves... in the Dead Sea... The sea waves caused damage on coastal settlements. All monasteries and churches in the region between Jerusalem, Amman and Jerash were ruined, and many thousands of people were killed... some buildings in Damascus were damages, and glass windows were broken..."
	4	746 Jan 18	2Palestine, jerusalem-disastrous, severe damage to the Temple area... about 11 am. Tiberias. Kh. el Mafjer near Jericho destroyed...Jerash-many of the greatest of her buildings ruined..."
	6	746 Jan 18 (or 748/749)	"The earthquake epicenter was probably in Dead Sea Rift..."
	7	746 Jan 18	"Felt in Egypt, Syria, Arabia and Mesopotamia. Great damage in Tiberias (30 synagogues destroyed), Jerusalem, Lod, Arad, and to monasteries north of the Dead Sea. About 600 settlements in Judea, Samaria and Galilee were hit and many casualties reported. Destruction of Hisham palace near Jericho and the city of Gerasa east of the Jordan. Tsunami in the Dead Sea and possible flooding of the Dead Sea southern basin. $M_L = 7.3$ ."
	9	746 Jan 18	"Tsunami hit the Levant coast."
	12, 13	746 Jan 18	"Destruction in Palestine 'from the coast to Jordan'."
	20	746 Jan 18	"An earthquake with destruction in Judea and apparently also in Samaria, that was felt in Syria, Mesopotamia and Egypt. A seismic sea wave on the coast destroyed a number of ships. About 600 structures were destroyed, many men were killed; numerous landslides came down. The cloisters on the north end of the Dead Sea suffered heavily. In Jerusalem the building damage did not appear to be particularly severe."
	6	746	"...Probably the exaggerated effects of several earthquakes were reported as a single event..."
	9	746	"Great damage in Jerusalem and to monasteries north of the Dead Sea."
	11	746	"... a great earthquake took place in Palestine, Jordan and all of Syria at the fourth hour after dawn..."
	16	746	"Palestine, Jordan Valley, and all Syria; exceedingly disastrous, especially about Jerusalem."
	14	747	"Jerusalem IX."
	16	747 (AH 130)	"Damascus; very violent."
	2, 22	747 Sep 11-748 Aug 30 (130 AH)	"An earthquake in Damascus which was so violent that people were obliged to leave the town."

**TABLE 2.5A-3**  
**ABSTRACT OF FELT DESCRIPTIONS**

CAT. NO	REF.	DATE	COMMENTS
	12, 13	747-748	"Panic in Damascus."
	16	748	"Syria and Egypt: Aleppo and Antioch; fairly strong, destroyed buildings."
27	6	756 Mar 8 (or 757)	"The earthquake affected Syria and Israel. Much damage was caused to the Temple Mount area in Jerusalem (intensity probably VII-VIII)."
	4	756 Mar 8	Similar to Ref. 6.
	9	756	"Damage to the Temple area in Jerusalem."
	16	756	"Palestine and Syria; strong shock."
	4	750 to 780	"Jerusalem-severe damage to the Temple area; two shocks, the second one ruined the mosque el Aqsa..."
	4	765 May 3	"Jerusalem-partial collapses in the mosque el Aksa."
28	7	765 May 3	"Felt northern Syria. Damage to buildings in Jerusalem."
	9	765 May 3	Similar to Ref. 4.
	20	765 May 3	"Probably, at least between 754 and 775, a destructive earthquake in Palestine that apparently was felt in Antiochia and Aleppo in Syria. In Jerusalem, among others, additional parts of the el Aksa mosque were overthrown..."
	16	775	"Antioch, an earthquake."
29	20	775 to 780	"... a destructive earthquake in Judea...on Mount Moria in Jerusalem the mosque of the Dome of the Rock was damaged and the Aska mosque, restored by Caliph, Abu Dschafar Mansur once again lay in ruins..."
	16	775-795	"Palestine and Syria."
30	4	808	"Jerusalem-great damage to the church of St.Mary and the mosque el-Aksa."
31	20	828?	"An earthquake in Palestine."
32	4	853 +	"Tiberias."
	22	853 Jun 12 to 854 Jun 1	"At Tiberias after an earthquake the ground sunk."
	9	853/854	Date uncertain. "Tidal waves in the Sea of Galilee. Felt at Tiberias."
	12, 13	853-854	"Seismic shock and settlement at Lake Tiberias."

**TABLE 2.5A-3**  
**ABSTRACT OF FELT DESCRIPTIONS**

CAT. NO	REF.	DATE	COMMENTS
	14	854	"Tiberias-X-XI."
33	2	856 Dec 3-30 (242 AH)	"A very violent earthquake. At Tunis about 45,000 persons were buried under their houses. It extended also to Yemen, Khorasan, Fars, Syria, Bastam, Kommh, Kashan, Rai, el-Damaghahn, Nishapur, Taberistan and Isapahan..."
	7	856 Dec	"Near Qom, north-central Iran...Felt in Syria, Arabia and Israel. $M_L = 8.0$ ."
	12, 13	856 Dec	"Shocks felt in Syria (Destruction in Iran etc.)"
	4	856 +	"Persia, Syria, Arabia -- very strong."
	2	859 Apr 8-860 May 27 (245 AH)	"Earthquakes prevailed over the whole world and many towns and bridges were destroyed."
	4	859 Apr 8	"Jerusalem-some damage to the Temple area."
	6	859 Apr 8	"Two earthquakes with epicenter and intensity similar to the one of 756, March 8."
	7	859 Apr 8	"Near Samandang an inhabited mountain fell into the sea. Total destruction of Antiochia. Felt in Mecca (Arabia), Egypt, Turkey, Armenia, Mesopotamia. Damage in Jerusalem."
	9	859 Apr 8	"Northern coast of Tyria (sic) near Samandag. Inland epicenter close to the coast."
	22	859 Apr 8-860 Mar 27 (245 AH)	"Earthquake over the whole world. At Antiochia the walls of the city were destroyed, and many parts of it sunk into the ground and disappeared. Many bridges and villages were destroyed, and a mountain covered with 90 villages fell into the sea carrying with it 1,500 houses. The river disappeared one parasang's (26) distance. The earthquake extended to Raqwqa, Harran (4), Ras el'Ain, Hims (5), Urfa (6), Damascus, Tarsus, Misis, and Adina. The shock shattered mountains on the shore of Syria, in Latakia. El-Son was overwhelmed, and mountains moved with their inhabitants. The shock then crossed the Euphrates and was felt in the Khurasan region."
	12, 13	859	"Destruction at Antioch, Latakia. Damage in Damascus, Homs, Jerusalem (to the Temple)."
	14	859	"Maghreb."
	16	859	"Antioch and Laodicea; very disastrous shocks, more than 1,500 houses destroyed."
	11	859-860	"Earthquakes over the whole world...". Similar to Ref. 7.
	4	7860	Date only.
	16	860	"Armenia, Syria, Palestine, Africa."



**TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS**

CAT. NO	REF.	DATE	COMMENTS
34	7	881	"Tsunami at Acre."
	9	881	"Tsunami hit Acre."
	12	881	"Tsunami at Acre."
	20	881	"A seismic sea wave on the Palestine coast at Akka."
	4	881/2	"Acre, tidal wave."
	16	881/2	"Acre, tidal wave."
35	7	991 Apr 5	"Great destruction and many casualties in Damask and Baalbek. Felt as far as Egypt."
	9	991 Apr 5	"Coast of Syria. Probably inland epicenter."
	12, 13	991 Apr 5	"1,000 buildings destroyed in Damascus, number dead; destruction of villages near Baalbek."
	20	991 Apr 5	"Earthquake in Syria that extended to Egypt and was accompanied by a seismic wave. In Damascus more than 1,000 houses collapsed; many dead. Also the villave Beglabek was destroyed. Aftershocks were nearly 6 weeks long."
	14	991 Apr	"Damascus-IX; Ba'albek."
	16	991	"Syria."
	16	992	"Syria."
36	4	1002 +	"Jordan Valley-loss of life."
	14	1002	"Syria, border zone. Intensity IX."
	2	1002 Nov 10-1003 Oct 29 (393 AH)	"In Syria, Abasim and the Greek frontier many castles were ruined by an earthquake."
	22	1002 Nov 10-1003 Oct 29	"An earthquake in Syria, the Greek frontier and at Abasim. Many castles and houses were destroyed; the shock extended to the capitals and the ports of these regions."
37	4	1016	"Jerusalem-strong, the cupola of the Dome of the Rock collapsed."
	6	1016	"The epicenter was probably in the Dead Sea Rift. The highest intensity at Jerusalem did not exceed VIII..."
	20	1016	"A destructive earthquake in Judea caused in Jerusalem, among other things, the cupola of the Dome of the Rock to collapse; it would be restored 6 years later by Caliph Hakim."

**TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS**

CAT. NO	REF.	DATE	COMMENTS
38	4	1032 Mar 6	"Jerusalem, Ascalon, Gaza. Heavy damage. Tidal wave."
	6	1032 Mar 6	"Epicenter unknown..."
	7	1032 Mar 6	"Tsunami. Heavy damage. Felt in Jerusalem. Building collapsed in Gaza. Felt in the Negev. A similar event occurred in 672 A.D."
	9	1032	"Tsunami at Gaza and Ashkelon."
	16	1032	"Asia Minor, Syria Palestine: Jerusalem, Askalon and Gaza..."
	7	1033 Dec 5	"Before sunset."
	3	1033 Dec 10	"A destructive earthquake in Palestine which was strongly felt and caused great concern in Syria and Egypt. The shock destroyed one half of Akko and Nablus. In Ramlah a large number of houses and the Mosque were ruined and about one third of the town was destroyed but with no casualties. Considerable damage was done in Jerusalem...In Ascalon, the minaret and the mosque fell down together with many houses in the town; the al-Gaalam mosque in Gaza together with other buildings was ruined but only the top of the el-Gaalam minaret was thrown down. The earthquake caused large scale landslides in the region of Banyas, on the Mediterranean coast; and the mainshock was associated with a damaging seismic sea-wave...Aftershocks continued for 40 days, and the damage extended to the south, in Egypt, where some people were killed..."
	15	1033 Dec 10	In addition to above: "The city of Jericho was overturned on its inhabitants, and likewise Nablus and the villages in its vicinity (Al-Antaki)...Part of the mosque of Abraham (in Hebron) was ruined, but the chamber itself remained intact..."
	9	1033	"Jericho destroyed. Damage in Jerusalem."
	16	1033	"Syria, Palestine, Egypt; very strong, 70,000 victims; the earth trembled 40 days."
	16	1033 (425 AH)	"Many shocks in Egypt and Palestine; Ramleh one-third destroyed and walls of Jerusalem thrown down."
	2	1033 Nov 26-1034 Nov 15 (425 AH)	"Many earthquakes took place in Egypt and Syria, by which one-third of Ramlah was destroyed. The walls of Jerusalem fell down and many villages were swallowed up in the ground."
	22	1033 Nov 26-1034 Nov 16 (AH 425)	Similar to Ref. 2.
38	11	1033-1034 (20 Nov 1033- 11 Nov 1034)	"Many earthquakes took place during this year. In Syria, one-third of Ramla was destroyed, the walls of Jerusalem collapsed..." Damage in Gaza, Nablus and Egypt.
	9	1033/1034	"Destruction of Ramla."

**TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS**

CAT. NO	REF.	DATE	COMMENTS
	12, 13	1033-34	"Ramla, Nablus destroyed in part; Acre half destroyed by a tsunami; a number dead...Damage in Egypt."
	20	1033 or 1034, Mar 6	"Destructive earthquakes in southern Palestine, to which Der el-Bahla fell completely victim, while Gaza and Askalon suffered severe destruction, Jerusalem, building damage. A huge seismic sea wave destroyed half of Akka. Allegedly 7000 men perished..."
	6	1034 Jan 4 (or 1033 Dec 10)	"One of the largest regional earthquakes which was reportedly felt from Egypt to Syria. Foreshocks and aftershocks lasted 40 days...probable epicenter in the Dead Sea Rift..."
	7	1034 Jan 4	"(Evening) Tsunami at Acre and coasts of Lebanon and Israel."
	14	1034 Jan 4	"Tiberias X-XI, Ramla X-XI, Gaza, Acre SW." (SW: Sea Wave).
	15	1034 Jan 4	"...A terrible earthquake occurred in the country, such as has never been seen or heard before..."
	9	1034 Jan 5	"Acre hit by tsunami. The sea receded and returned after an hour (?)"
	6	1034	"An offshore earthquake. In Acre the sea receded for an hour indicating a tsunami phenomenon. The effects of these two earthquakes were reported as if they were caused by one alone."
	16	1034	"Syria, Palestine: Jerusalem, Gaza, etc.; very strong, walls and rocks fell."
	14	1047	"Ramla-IX."
39	4	1035	"Jerusalem-moderate."
	13	1035	"Destruction in Jerusalem, 40 days of shocks."
	16	1035	"Jerusalem; shocks continued during 40 days, many houses destroyed."
40	4	1060	"Jerusalem-the roof of el Aksa mosque collapsed."
	6	1060	"The earthquake was felt at Jerusalem with a probable intensity VII (the roof of the mosque el-Aqsa collapsed). Probable epicenter in the Dead Sea Rift..."
	7	1060	"Damage to buildings in Jerusalem. Strong in Judea."
	9	1060	"Damage to el-Aksa mosque in Jerusalem."
	16	1060	"Judea: Jerusalem; moderate."
	20	1060	"A heavy shock in Judea. At Jerusalem, among other things, the dome of the Aksa mosque collapsed."

**TABLE 2.5A-3**  
**ABSTRACT OF FELT DESCRIPTIONS**

CAT. NO	REF.	DATE	COMMENTS
41	7, 9	1063 Apr 20	"Destruction of the port of Elat."
	20	1067 Apr 20	"Destruction of the port city of Ailat, whose ruins can still be found in the immediate neighborhood of the modern El Akaba on the Gulf with the same name."
42	20	1067 Nov 11	"Severe earthquakes in Palestine to which numerous men's lives were lost...collapse of many buildings in Et-Ramale. The shock was also felt in Syria and Egypt, mainly in Alexandria. Seismic sea waves on the coast."
	16, 17	1067 (460 AH)	"Palestine: Ramleh destroyed, Jerusalem shaken."
	4	1068 Mar 18	"Ramle destroyed, two houses only remained. Damage of the roof of the Dome of the Rock in Jerusalem. Tidal wave..."
	7	1068 Mar 18	"Southern coasts of Israel. Tsunami at Ashdod and Yavne. Sea recedes and returns. Felt in Egypt and Arabia. Strong in Jerusalem."
	14	1068 Mar 18	"Ramla IX, Jerusalem IX, Baniyas IX, Wadi As Safra VI, Khaybar (Arabia) IX, Tayma (Arabia) IX, Sharm Yanbu VI, Elat IX, Kufa VIII, Tinis (near Dumyat) Sea Wave."
	15	1068 Mar 18	"A Shi'ite who had been in the Rijaz told me that the earthquake happened there at the same time, which was Tuesday, 11th Jameda I (March 18, 1068), It caused two embattlements from the mosque of the prophet...(in Medina) to be thrown down while the earth split open...and a (new) spring of water gushed to it. The city of Ayla (Eilat) was completely ruined and all of its inhabitants perished." (from Ibual-Sabi'via Ibn Taghri Birdi).
	23	1068 Mar 18	(Tsunami at) "Coasts of Israel at Holots Ashod and Yavne."

**TABLE 2.5A-3**  
**ABSTRACT OF FELT DESCRIPTIONS**

CAT. NO	REF.	DATE	COMMENTS
	32	1068 March 18	<p>The event was a major earthquake in the Hejaz and northern Arabia. It occurred in the morning of 18 March 1068 and killed in all about 20,000 people. Aila (Eilat) was completely destroyed with all but 12 of the inhabitants. In Tabuk, three springs of water appeared and in Taima the ground was "split open". Near here a spring of water gushed out. The earthquake was felt at Khaibar, Medina (where the shock brought down two decorative crests of the mosque of the Prophet). Wadi al-Safra, Wadi al-Qura, Badr, and Yanbu. In Sinai the earthquake was strong enough to cause alarm at the monastery of Sta Catherin, and in Palestine to damage al-Ramla and ruin many houses with loss of life. Damage was reported from Baniay, where about 100 people were killed, and from Tinnis in Egypt. There is no evidence of damage in Jerusalem except for the fall, about this time of a great lantern from the roof of the dome of the Rock, which was allegedly cracked. From Cairo, the only damage reported was to one corner of the mosque of 'Amr in Fustat. Water rose in wells in Egypt and Palestine, and the retreat and return of the sea on the Mediterranean coast drowned a large number of people. The shock was felt as far as al-Rahba and al-Kufa on the Euphrates, Rum (Anatolia) and Alexandria, where it caused no damage. There is some archaeological evidence to suggest earthquake damage at Qasr al-Tuba, but whether it was caused by this or, more probably, several earthquakes of that period, cannot be established. This earthquake was followed by two others reported from the Hejaz.</p> <p>The epicentral area of this event must be sought in the sparsely inhabited region between Aila and Taima, where the available evidence points to faulting but where information about the few uninhabited villages, even if destroyed, would not attract much attention. Contrary to the statements that al-Ramla was completely destroyed between leaders of the Jewish communities in Jerusalem and al-Ramla appears to include no reference to such an event. This is supported by the fact that nearby Jerusalem was not seriously affected, and by the silence of contemporary Byzantine historians. It is likely that the exaggerated description of the earthquake effects at al-Ramla refer to the earlier devastation of the town by the earthquake of 1033, which is mentioned by contemporary Jewish correspondence, and to the later effects of famine and epidemic, which also affected Egypt.</p>
	6	1068 Mar 18 (or 1069)	"The earthquake affected Israel and Egypt. Highest intensity VIII-IX was probably attained at the destroyed Ramle...Probable epicenter in the offshore province."
	11	1068	"There was a terrible earthquake in Palestine and Egypt."
	16	1068	"Syria, Palestine, Arabia, Egypt."
	16, 17	1069 (462 AH)	"Palestine and Egypt: Ramleh and Jerusalem damaged."
	16	1069	"Syria."
43	6	1070 Feb 25	"Smaller earthquakes with an unknown epicenter. Intensity at Ramleh probably VII."
	7	1070 Feb 25	"Damage at Ramleh and Cairo. Felt in Jerusalem."

TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS

CAT. NO	REF.	DATE	COMMENTS
	11, 22	1070	"An earthquake at Ramleh and its dependencies. Egypt was also shaken and a corner of the principle mosque of Cairo gave way. The shock was felt in Jerusalem and it was immediately followed by other earthquakes, two of which occurred on the same day."
44	4	71096	"Jerusalem. Doubtful !"
45	4, 7	1105 Dec 24	"Felt strongly in Jerusalem."
	6	1105 Dec 24	"Epicenter probably in the Dead Sea Rift. Intensity at Jerusalem - probably VII..."
	9	1105 (Dec 24)	"Damage in Jerusalem."
	20	1105 Dec 24	"Scattered, apparent but harmless earthquakes in Palestine; it was felt strongly in Jerusalem."
	16	1105	"Jerusalem; a great shock."
46	4	1113 Jul 18	"Palestine, Jerusalem; at midnight."
47	4	1113 Aug 9	"Jerusalem, approx. 9 a.m."
	16	1113	"Syria, Palestine, Egypt; Jerusalem, Aleppo, Edessa (Hours); two shocks during the year."
48	4	1117 Jun 26	"Jerusalem-strong, many buildings destroyed."
	6	1117 Jun 26	"Epicenter probably in the Dead Sea Rift. Intensity at Jerusalem probably VII."
	9	1117	"Damage in Jerusalem."
49	4	1160	"Jerusalem-slight. Monastery of Mar Elias seriously damaged."
	7	1160	"Destruction of St. John Monastery on the river Jordan."
	9	1160	Similar to Refs. 4 and 7.
	16	1160	"Palestine: Jerusalem, Bethlehem."
	20	1160	"Severe earthquake probably in the Ror or in the western sector of Transjordan. The cloister of John near the mouth of the Jordan was destroyed...The shock was felt strongly, but otherwise without significant damage in Jerusalem and Bethlehem."
50	4	1182	"Judea and Galilee-moderate to severe. Nablus."
	7	1182	"Destructive at Busra and southern Syria. Destructive in Judea and Nablus."

TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS

CAT. NO	REF.	DATE	COMMENTS
	12, 13	1182	"Destruction in Syria - South (Hauran?) and in Judea."
	16, 17	1182 (578 AH)	"Northern Palestine: Emessa and Nablus."
	16	1182	"Syria and Judea; several towns thrown down."
	20	1182	"A destructive acting shock insouthern Syria was noticed as far as Judea."
	16, 17	1200 (597 AH)	"Syria; particularly destructive."
	2	1200 Oct 12-1201 Sep 30 (597 AH)	"There was an earthquake almost over all the world more particularly in upper Egypt, where it caused great destruction; it extended over Syria, and the sea, Mesopotamia, the Greek empire and Iraq; it was particularly destructive in Syria. It was also felt in Armenia, Azerbaijan and it is calculated that through this earthquake 1,100,000 lives were lost. The first shock lasted but a short time, but after that it continued for several days, and it seems that it came from mesopotamia to the sea coast."
	15	1201	Eight lengthy accounts similar to other references.
	16	1201	"Syria, Palestine, and Mesopotamia; violent shock which extended to the Island of Cyprus."
	19	1201	A conservative estimate of the seismic intensities based on Arab sources (Ref. 15) are summed up as follows: Nablus- totally destroyed save the Samaritan quarter IX-X (MMS), Safed-of all the inhabitants only one escaped death IX, Banias, Hunin, Tibrin, Acre, Tyre VIII, Syrian coast, Ba'al Bek VIII.
	4	1201 +	"Egypt to Anatolia and Iraq. Tyre, Acre. Nablus-30,000 killed (!!)..."
	14	1201 Jun 2	"Ba'albek X-XI, Damascus IX, Acre VIII-IX, Jerusalem VII-VIII, Cyprus, Cairo V-VI, Iraq V-VI."
	22	1201 Jul 5-Aug 2 (597 AH)	Similar to Ref. 11.
	7	1201 Jul-Aug	"Felt in Mesopotamia, Anatolia, Upper Egypt, Cyprus. Destructive in Tripoli, Sur, Acre, Nablus. Many monuments and templs at Baalbek collapsed. Many victims."
	12	1201 Jul-Aug	"Heavy damage at Tripoli, Beyrouth, Tyre, Acre, Nablous; a number dead. Destruction at the monuments of Baalbek; sinking of the terrain."
	13	1201 Jul-Aug	"Complete destruction of Tripoli, Tyre, Acre, Nablous; a number dead. Destruction at the monuments of Baalbek; sinking. (As-Soyuti gives 1,00,000 victims for all of the earthquakes for the year, in Mesopotamia, Syria, and upper Egypt)."

TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS

CAT. NO	REF.	DATE	COMMENTS
	6	1201 Aug 2-1202 May 20	"The earthquake caused great destruction in Syria and upper Egypt. There were many victims in Tripoli, Tyre, Acre and Nablus...Most of the fortresses on the Syrian coast were reportedly destroyed. The exaggerations are evident. Had such a large earthquake occurred it would have affected many more cities, such as Acre, Caesaria, Gaza, Ramla, Jerusalem, etc., contrary to available data. Probably this description combines the effects of two or more earthquakes."
	11	1201 Aug 2-1202 Jul 5	"An earthquake occurred which shook almost the whole world. More particularly Upper Egypt and Syria where it caused great destruction. It extended to Mesopotamia, the Greek Empire and Iraq. Most of the castles on the Syrian coast were destroyed. Tripolis, Acre, Tyre and Nablus were completely destroyed, and 30,000 persons perished. Most of the castles of Ba'albek collapsed and the mountains were sent asunder." (Es Soyuti).
	3	1202 May 20	"...The damage was particularly heavy in the region of Shamrin; all houses in Nablus were either thrown or damaged beyond repair and the same happened in the province of Hauran where not a single village, including Bosra, was left unscathed. The earthquake destroyed practically the whole town of Safet, killing a large number of people, and in Beit-Jann part of the village was involved in landslides and it was destroyed...Jerusalem also suffered some slight damage...The earthquake was associated with a seismic sea-wave which caused additional damage, presumably in Cyprus and on the Syrian coast..."
	4	1202 May 20	"Egypt, Cyprus, Syria, Hauran, Galilee, Palestinian coastal plain..."
	6	1202 May 20	"The epicenter was probably in the northern part of the Dead Sea Rift. A high intensity was probably attained at Safed and Banias..."
	7	1202 May 20	"Destruction in central Israel. Nablus destroyed. Safed, Beit Shan and Banias experienced MM9. Felt in Syria, Cyprus, Egypt and Mesopotamia. Jerusalem MM5. Acre MM8. Tierias MM9, damage to the city walls."
	20	1202 May 20	"Strong earthquake in Samaria and Galilee; many dead. Nablus was completely destroyed except for one street. Akka and Safed for the most part. The village of Galilee, Lebanon and Antilebanon suffered especially, as well as the entire Syrian coast. The latter was also devastated by a seismic wave, which threw ships and piles of fish on land; perhaps the destruction in Akka was caused by the seismic wave. The shaken region included Egypt as far as Kuo, parts of Mesopotamia, Armenia, and Lesser Aria as well as Cyprus and the south Sporaden."
	21	1202 May 20	"A large earthquake was widely felt in the Middle East around daybreak on the morning of 20 May 1202...the shock was felt from Lesser Armenia, parts of Anatolia and northwest Iran down to Qus in upper Egypt, and from Sicily in the west to Iraq and Mesopotamia in the east, i.e. within an area of average radius about 1,200 km...an ensuing seismic sea-wave and aftershock sequence...extensive and serious damage in Syria and to a lesser extend in Cyprus, with great loss of life."
	9	1202 May 22	"Destruction at Tripoli, Tyre, Acre, Ba-albek and Nablus. Tsunami hit Acre."
	2	1202 April 26-May 24 (598 AH)	"At Emessa, the castle of the Kurds was destroyed; it extended as far as Nablus."



TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS

CAT. NO	REF.	DATE	COMMENTS
	14	1202 May	"Homs VIII."
	11	1202	"...a great earthquake destroyed many houses in Akko, Tyre, Beiruth and Tripoli..."
	12, 13	1202	"Destruction to Krak, felt in Nablus."
	15	1202	Three accounts similar to other references.
	16	1202	"Similar to the preceeding and possibly the same occurrence; strong and repeated for several months."
	20	1202	"Earthquake with destruction to everything at Ballbek, damage at Homs and the Kurdish Castle Kalat el-Hösu. The earthquake was also felt in Mesopotamia and on Cyprus."
	2, 22	1203 Sep 10-1204 Aug 29 (600 AH)	"An earthquake in Egypt, Mesopotamia, Mausul, Iraq, the Greek empire and Cyprus; it extended as far as Sabta in the Maghrib."
	14	1203	"Egypt, Syria, Iraq, Turkey, Maghreb."
	16	1203	"Syria."
	16, 17	1203 (600 AH)	"Mesopotamia, Syria, Cyprus, and Greece."
	15	1203-1204	Four accounts similar to other references.
	22	1203 Sep 10-1204 Aug 28	"Egypt, Mesopotamia, Syria, Iraq, the Greek Empire and Cyprus were shaken by an earthquake. It extended to Sabka in Syria and North Africa."
	11	1204	"A violent earthquake was felt in Egypt, Syria, Mesopotamia, Asia Minor, Sicily, Cyprus, Iraq and elsewhere. The wall of Tyre collapsed."
	16	1204	"Egypt, Syria, Mesopotamia, and Asia Minor, Cyprus, and Sicily; an earthquake which threw down the walls of Tyre; very strong at Aleppo, probably vertical."
51	22	1211 Jun 15-1212 Jun 2	"Egypt and in particular Cairo were shaken by a severe earthquake; many persons lost their lives."
	14	1212 May 2	"Elat VIII-IX, Karak (Jordan) VIII, Cairo VIII."
	7	13th century	"Felt in Egypt. At Qala't-el-Gindi (29°50'N, 33°08'E, b. 1173, fortified 1187 by Saladin), Northern wall fell to the N-NW."
52	14	1292	"Ramla VIII, Karak VIII."
	16	1292	"Syria."

TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS

CAT. NO	REF.	DATE	COMMENTS
	20	1292	"An earthquake in Syria."
	12	1293 Jan-Feb	Similar to Ref. 13 except no reference to El-Kerk.
	13	1293 Jan-Feb	"Destruction at Ramla, Lod, El-Kerk, damage to Gaza."
	6	1293	"The epicenter was probably in the Dead Sea Rift. There was destruction at Kerak..."
	11, 22	1293	"Ramlah, Lod, El-Kerk and three villages were destroyed. Gaza was also damaged."
	4	1293 +	"Gaza, Ramle, Oaqun, Kerak-three towers of the citadel collapsed."
	15	1293	"...A vigorous earthquake happened in the area of Gaza, Ramle, Lydda and Karak. It was most heavily felt in Karak where three towers of the fortress were ruined...it has been reported that rains fell incessantly in Ramle and destroyed many houses and domes..."
53	16, 17	1302 (702 AH)	"Egypt and Syria."
	3	1303 Aug 8	"A large earthquake in the Eastern Mediterranean which was felt over an area of about 900 kilometers radius, and caused some damage in Crete, Rhodes, Syria and Egypt." Extensive damage in Cairo "however...almost nothing collapsed...In other parts of Upper Egypt the damage was more serious. In the province of Garbiah, the small town of Saha was almost totally ruined; also in Bohairah, the town of Damanhur suffered heavy damage. Two more villages in Shakish were ruined, but these as well as the other villages that were damaged consisted of a large number of mud huts and adobe houses...In Alexandria a good part of the ramparts overthrown together with 40 battlements and 27 towers...The sea advanced flooding Alexandria as far as the Gate of the Sea, carrying on land a number of boats...The damage extended to Syria where in Damas the wall of the mosque of the Ommiads cracked. In Akka the sea retired from the coast and then returned, flooding the coast. In Safed the citadelle collapsed, but otherwise there was not serious damage. Flooding of the coasts and minor damage was reported from the Peloponnesus..."
	6	1303 Aug 8	"..Probable epiventer in the Northern Red Sea."
	7	1303 Aug 8	"Off coast Alexandria...Felt in Peloponnesus, Syria, Israel. Tsunami in Rhodes, Crete and Levantine coast."
	9	1303 (Aug 8)	"Egyptian, Israelian and Syrian coasts. Tsunami hit Alexandria, Gaza and Acre. Submarine source."
	12, 13	1303 Aug 8	"Destruction in Syria and particularly in Egypt. Tsunami at Alexandria and perhaps also at Acre."
	22	1303 Aug 8	"Egypt and Syria were struck by a violent earthquake; many persons were buried under the ruins. The shocks lasted for 40 days and the sea advancing submerged half of the city of Alexandria."
	2	1302 Aug 26-1303 Aug 14 (702 AH)	Similar to Ref. 22.

TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS

CAT. NO	REF.	DATE	COMMENTS
	7	1303 Dec	"Tsunami at Crete, Alexandria and Acre, Egypt and SW coasts of Peloponnesus."
	16	1303	"Syria."
	16	1304	"General shock in the eastern Mediterranean, experienced at Acre."
54	7	1312 May 1 (or 1608)	"MM8 at St. Catherine Monastery (28°34'N, 33°57'E, b. 521 A.D.). Most destructive earthquake through several centuries prior to the event. Landslides. Northern wall of Monastery and its NW and NE corners knocked down. Numerous aftershocks and one foreshock at sunset of April 30, 1312. Monastery badly damaged. Monks left."
55	4	1355	"Palestine."
	12,13,16	1355	"Syria and Palestine."
	20	1355	"An earthquake was felt across Syria, that was also felt in Armenia and Palestine, light building damage."
56	14	1366 Oct	"Safad."
57	4	1374	"Palestine."
	16	1374	"Same locality" i.e. Syria, Palestine."
	13	1374	"Syria and Palestine."
	20	1374	"Earthquake with slight damage in Syria. The region of shaking extend to Armenia and Palestine."
58	4	1456 +	"Kerak-severe, the fortress badly damaged, 100 victims."
	4	1457	"Syria and Palestine. 32,000 victims (?)."
	4	? = 1458 Nov 12	"Jerusalem-cupola of a church near the Holy Sepulchre collapsed."
	6	1458 Nov 12	"Epicenter probably in the Dead Sea Rift. Intensity at Jerusalem-VII..."
	22	1458 Nov 8-1459 Oct 27	"At Kerk 100 persons perished due to an earthquake."
	14	1459	"Karak VIII."
59	4	1541	"Judea-slight."
	20	1541	"An apparently unimportant earthquake in Judea."
60	4	1534	"Palestine, Jerusalem - the tower of the Holy Sepulchre collapsed...this is the earthquake of 14.1.1546."

**TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS**

CAT. NO	REF.	DATE	COMMENTS
	6	5134	"The earthquake's epicenters and maximum intensities are similar to those observed in the earthquakes of 1458, Nov. 12."
	9	1534	"Jerusalem - the tower of the Holy Sepulchre collapsed."
	16	1534	"Palestine: Jerusalem."
	20	1534	"A destructive earthquake in Palestine. In Jerusalem, among other things, the clock tower of the Church of the Sepulchre was damaged. The Es-Sor bed of the Jordan river was damned by a landslide. A seismic wave was reported at Jafa."
	4	1545	"...this earthquake is probably identical with that of 1534 or 29.9.1546."
	6	1545	"Probably identical to that of 1546."
	3	1546 Jan 14	<p>"A destructive earthquake in Palestine. The towns of Schechem, Zozilgip, Joppa and Ramla were totally destroyed and in Nablus (= Schechem) 900 people were killed. High buildings suffered most and almost all belfries and minarets in Judea were damaged or destroyed. In Jerusalem damage was serious; the dome of the Rock and that of the Holy Sepulchre collapsed together with the surrounding walls. One third of the Temple also fell to the ground and many towers were damaged beyond repair...the city walls near the Golden Gate were heavily damaged...In Hebron the damage was equally serious...In Bethlehem the church of the Nativity was damaged and in Gaza the Medreseh of Qayt-bey was totally destroyed. The damage extended to Kerak, as-Salt and the shock was strongly felt in Damascus where it caused slight damage."</p> <p>"Landslides in the river Jordan and in its tributaries caused additional damage. The river Jordan was damned up by a landslide and the water ceased to follow for some time. Also streams flowing out into the sea near Joppa stopped."</p> <p>"...seismic sea-wave...caused heavy damage on coastal settlements between Gaza and Joppa where many thousands of people were drowned."</p>
	4	1546 Jan 14	Similar to preceeding, but specifies "The Jordan was stopped for two days by a landslide of Lisan maris above Jisr ed-Damlye. Tidal wave at Jaffa. The sea receded 'a days' walk long."
	20	1546 Jan 14	"Insignificant earth shock at Jerusalem."
	20	1546 Sep 29	"Severe earthquake in Samaria with great destruction in Nablus and Er-Ram. In addition it was mentioned in Jerusalem, Jaffa, Tripoli (Tarablus) and Damascus as well as Fermagusta on Cyprus. Large seismic sea-wave."
	4	1546 Sep 29	"Samaria, peripheral effects felt in Jerusalem. According to (Braslavski, p. 336) this earthquake is wrongly dated and identical with the one of 14.1.1546."
	9	1546	Similar to Ref. 7. "The Dead Sea fault apparently slipped through a length of some 50 km. Numerous aftershocks occurred during the same year..."
	16	1546	"Palestine: Jaffa, Siche and Rama (Ramleh?), earthquake wave, bed of the Jordan remained dry for two days."

TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS

CAT. NO	REF.	DATE	COMMENTS
61	4	1546 Mar 15	"Jerusalem-stronger than the preceeding one."
62	4	1546 May 14	Possible aftershock of 14 Jan 1546.
63	32	1588 Jan 4	The event was a damaging earthquake in the northern Red Sea area and Hejaz, occurring a little after midnight on 4 January 1588. The shock affected Sinai and was strongly felt in Cairo, where it was of long duration and caused panic. The minarets shook, some of them losing their top and several quarters and houses of Cairo were damaged. To the east of the city and Atfin, in the Muqattam hills, fissures opened and water poured out. The earthquake was destructive in Aila and caused rockfalls on the pilgrim route to Mecca. At Tabuk, also on the pilgrims there. Mecca itself was also affected by the shock. In Sinai, the mosque in the monastery of Sta Catherine's collapsed and, together with other structures, was later rebuilt. Poems were written about the event.
	14	1588 Jan 14	"Cairo VIII, Elat IX."
	7	1588	(Sinai) Date only.
64	7	1605 Jan 8	(Sinai) "Codex 213 of the Monastery of the Laura of St. Sabain Sinai."
65	7	1608 Dec 14	(Sinai) Same source as 8 Jan 1605.
66	7	1672	(Sinai) Date only.
67	3	1759 Oct 30	"Mallet: about 4h am. very violent shocks followed by other slighter ones up to the 25th November. Aleppo, Damascus, Tripoli and along the coasts of Syria, over a space of about 100 leagues square, the centre being supposed to be Safed."
	4	1759 Oct 30	"...Affected most of Palestine and Syria. Epicentre at Safed..."
	7	1759 Oct 30	"Heavy destruction and many casualties in Safed. Tiberias city wall overthrown. Area of damage extend to Haifa. Tsunami in the Sea of Galilee. Damage in Sidon (MM7). $M_L = 8.5$ ."
	9	1759 Oct 30	"Epicenter off-coast of Beirut..."
	10	1759 Oct 30	"Location: Safed; $M_L$ 6.5."
	14	1759 Oct 30	"Damascus X-XI, Quneitra."
	20	1759 Oct 30	"Severe earthquakes in Galilee with complete destruction of Safed and Tabarije. The region of damage included Hôr and Bikaa in addition to parts of Lebanon and Antilebanon as far as Damascus, where many houses and almost all minarets collapsed."

TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS

CAT. NO	REF.	DATE	COMMENTS
	21	1759 Oct 30	"...earthquake sequence between June 1759 and January 1760...Preceded by strong foreshocks on 10 June, the mainshock on 30 October 1759 completely destroyed the region of the Litani and upper Orites valleys. A violent aftershock on 25 November extended the damage to Safed in the south, with a cumulative epicentral region somewhat smaller than that of the 1202 event. Aftershocks continued well into January 1760 and damage in Tyre, Tripoli and Damascus was as serious as in 1202. One important aspect of the 1759 earthquake, which is much better documented, is that we know it was associated with a 95 km long fault-break in the Bekaa, on the west side of the valley, in places many meters wide (archives Nationales 1759).
	23	1759 Oct 30	(Tsunami on) "Coasts of Israel and Lebanon. Acre (H = 8')."
	12, 13	1759 Oct 30 and Nov 25	"Destructive at Baalbek (3 columns were thrown down, numerous dead), at Damas (one-third destroyed), in the villages of the Chouf, at Deir-Mukhalles (near Sidon), at Safed.
	6	1759 Oct 31	"The epicenter was probably in the northern Dead Sea Rift. This was one of the largest earthquakes..."
	20	1759 Oct	"Start of a three month long earthquake swarm with foci in the northern Ror and in the Bikaa. It is alleged these shocks took 30,000 lives, 20,000 in the Bikaa alone."
68	5	1759 Nov 25	"Beka'a."
	7	1759 Nov 25	"Great destruction at Baalbek. A part of Damask destroyed. Damage extends to Antiochia and Jaffa. Safed (MM8). Many thousands of persons were reported to have perished in the Beka'a." (This report appears to include mainshock too).
	10	1759 Nov 25	"Location: Beka'a; M <sub>L</sub> 6.8."
	20	1759 Nov 25	"The Syrian mainshock of the forementioned earthquake swarm with a felt region from above Antioch to Jafa. particularly severe devastation afflicted numerous villages of Lebanon, Bikaa' and Antilebanon (Dschebel esch-Scherki), during which there were very many deaths..." Report continues with detailed description of temple damage in Baalbek...A third if Damascus was destroyed.
	16	1759	"Coele-Syria: Baalbek (Heliopolis); 20,000 victims, repeated shocks during eight months; Aleppo, light shock; Sea of Tiberias, Safed, Damascus, Akka, Tripolis.
69	7	1801	(Sinai) Date only.
70	20	1814	"A strong earthquake with rock falls on the border of the El Ledscha volcanic region."

**TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS**

CAT. NO	REF.	DATE	COMMENTS
71	4	1834 May 23	"Tiberias, Acre, Jerusalem, Bethlehem, Ascalon, Gaza. Strong, many aftershocks during 10 days. Jerusalem-several churches damaged, including the cupola of the Holy Sepulchre. Damage to the city wall, many houses and cisterns, which were thus emptied. A minaret collapsed in the city and one on Mount of Olives; so did the cupola of the Ascension. Bethlehem-much damage to the Latin, Armenian, and Greek-orthodox monasteries...Deir Mar Saba-a tower was cracked. large blocks of asphalt floated on the Dead Sea."
	5	1834 May 23	"(South Dead Sea Basin - epicenter determination after Shalem, 1951)."
	6	1834 May 23	"The epicenter was probably in the Dead Sea Rift. The maximum intensities - VIII - can be attributed to Jerusalem and Bethlehem."
	7	1834 May 23	"Damage in Jerusalem, Bethlehem, Mar-Saba Monastery, Nablus, Kerak and Gaza...The shallow water road connecting the Lisan with Ein-Gedi disappeared and since then the sea is impassable by foot. The monolith of King Meisha fell, which led to its discovery in 1868. Many columns and arches also fell in the old cities of Moab."
	9	1834 May 23	"Damage in Jerusalem, Bethlehem and Mar Saba..."
	10	1834 May 23	"Location: Lisan; $M_L$ 6.3."
	20	1834 May 23	"Scattered earthquakes in Palestine, noted at Rasse, Askalan, Akka and Tabarije. In Jerusalem strong shaking to houses and several churches."
	16	1834	"Syria and Palestine: Acre, Jerusalem, Ascalon, Gaza, Tiberias, etc.; very strong, damaged several churches in Jerusalem."
72	4	1837 Jan 1	"Epicenter near Safed...Beirut-some damage to buildings. Sidon-some houses collapsed, many damaged. A few persons killed. Tyre-damage to the city walls and the medieval cathedral. Many houses collapsed. 12 persons killed, 30 injured. The inhabitants evacuated the town for a number of days. Hunin-severe damage to the castle. Sa'sa not affected? el Jish-destructive, SM11, 235 victims. Qaddita-severe SM9-10. Ein Zeitun-destructive, SM11. Safed-SM11. About 5000 victims! Clefts in the ground. The houses on the steep slopes fell on one another. Tiberias-destructive, SM10. About 700 victims (=22% of the population), city walls overthrown, the output of the Hot Springs increased considerably for a number of days, the lake swept the shores and killed many people. Lubay-severe, SM8. 143 victims (?). Sehera-destructive, SM9-10. Kafr Kenna-very light damage only, SM5. el-Reina-destructive, SM10-11. Nazareth-5 killed, moderate damage to buildings, SM7. Saffuriya-almost unaffected, SM4-5. Acre-part of the fortifications overthrown, several persons killed and injured. Nablus-strong several people killed. Jerusalem, Bethlehem, Hebron-moderate."
	6	1837 Jan 1	"One of the largest and most destructive regional earthquakes. Its probable epicenter was in the northern part of the Dead Sea Rift. The maximum intensity-IX..."
	7	1837 Jan 1	"Destructive in Safed and Tiberias. 5000 victims. Damage at Sur, Sidon, Damask, Beirut. Tsunami in the Lake of Galilee. Appearance of asphalt blocks in the Dead Sea."

TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS

CAT. NO	REF.	DATE	COMMENTS
	9	1837 Jan 1	"Destruction of Safed and Tiberias... Epicenter near Safed..."
	10	1837 Jan 1	"Location: Safed; $M_L$ 6.4."
	12, 13	1837 Jan 1	"Epicenter at Safed (10), destruction at Tyr (9), damage at Saida and Beyrouth (8), Jebail (7), felt in all of Lebanon (4) and in Damascus (6-7). There were reported 5,000 victims at Safed, 700 at Lake Tiberias."
	20	1837 Jan 1	"In Galilee destructive earthquakes with more than a thousand dead, this was also reported from the island of Cyprus. Safed was almost completely devastated; here alone more than 1000 dead (allegedly 5000). Tabarije lost a large part of its houses and city wall in addition to 700 dead; the building on the mountainside and to the north suffered the most. It created rock fissures, increase in temperature and flow of hot springs and set the water of the Sea of Galilee into excitation. The main region of damage stretched from the Yizreel valley to Beirut, a secondary zone from Nablus to Hebron, beyond bethlehem. Numerous aftershocks in Galilee until about the end of the month, noted chiefly at Safed and Kafir Kenna; building damage in Sur on the 24th."
	11	1837	"Upon this people, it was said, fell here in Tiberias the chief weight of the earthquake, and a large proportion of the hundred who then perished were Jews..."
	16	1837	"Syria, Palestine, and the Jordan valley: Safed, entire town destroyed, 5000 victims; Beirut, Damascus and Tiberias, also Acre and Jaffa suffered greatly; at Tripoli only a strong shock was felt; the Sea of Galilee was thrown into violent commotion. mention is made of the destruction of Rani, a village near Cana, where little harm was done. Rani appears to be Reinch, which was destroyed in 1927, while neighboring towns escaped."
	4	1838	"...Probably identical with the preceding one."
	6	1838	"Probably identical with the one of 1837."
	9	1838	"Destruction at Jaffa."
	13	1838	"Destruction at Jaffa, numerous dead."
	16	1838	"Judea: Jaffa; 3,000 victims, great destruction."
73	7	1839	(Sinai) Date only
74	4	1844/45	"Jerusalem-2 slight shocks during the year."
75	4	1857 Sep 21	"Morning: Jerusalem-two slight shocks of about one minute's duration."
	10	1857 Sep 21	Date only. Felt in Jerusalem. $4.3 \leq M_L \leq 5.0$ .
76	4	1859 Oct 24	"Jerusalem-strong, probably SM5-6."



TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS

CAT. NO	REF.	DATE	COMMENTS
	10	1859 Oct 24	Felt in Jerusalem. $M_L$ 5.0.
	9	1859	"Jerusalem."
	16	1859	"Sueidije, Antioch, Aleppo, Beyrouth."
77	4	1863 Sep 24	"Jerusalem-probably SM5, lasting 1/4-1/8 minute."
	16	1863	"Jerusalem."
	10	1863 Sep 24	Date only. Felt in Jerusalem. $4.3 \leq M_L \leq 5.0$ .
78	4	1864 Mar 24	"Jerusalem."
	10	1864 Mar 24	Date only. Felt in Jerusalem. $4.3 \leq M_L \leq 5.0$ .
	16	1864	"Jerusalem."
	20	1864	"An earthquake was announced from Jerusalem."
79	4	1868 Jan 24	"Jerusalem-lasting about 8 seconds."
	10	1868 Jan 24	Date only. Felt in Jerusalem. $4.3 \leq M_L \leq 5.0$ .
	20	1868 Jan 24	"Earthquake in Jerusalem."
80	4	1868 Feb 19	"Jerusalem-slight."
	10	1868 Feb 19	Date only. Felt in Jerusalem. $4.3 \leq M_L \leq 5.0$ .
81	4	1868 Oct 7	"Jerusalem-slight."
	10	1868 Oct 7	Date only. Felt in Jerusalem. $4.3 \leq M_L \leq 5.0$ .
82	4	1870 Jun 24	"Palestine. Gaza-slight, Nazareth-slight, Jerusalem-strong."
	6	1870 Jun 24	"Epicenter probably in the Dead Sea Rift. Intensity at Jerusalem-VII; at Gaza and Nazareth-IV..."
	7	1870 Jun 24	"Alexandria: (MM7) Damage and tsunami. Destruction in the Nile delta. Felt in Syria and Israel. Felt along the entire Red Sea up to Aden (?). Also felt in Dardanelles, Greece, Albania, Malta and South Italy."
	9	1870 Jun 24	"Epicenter off coast of Alexandria. Destruction in the Nile delta."

TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS

CAT. NO	REF.	DATE	COMMENTS
	9	1870 Jun 24	"Felt in Gaza, Nazareth and Jerusalem."
	12, 13	1870 Jun 24	"Epicenter in the sea above the Nile delta. Destruction in the Delta, 7 at Alexandria, felt to Damas and south to the coasts of the Red Sea."
	16	1870	"Jerusalem."
	20	1870	"Earthquake shock in Jerusalem."
83	4	1873 Feb 14	"Jerusalem."
	7	1873 Feb 14	"Off coast Sur... Strong at Sur. Felt in Jerusalem and Cairo."
	9	1873 Feb 14	"Tyre."
	12	1873 Feb 14	"Strong at Tyre, weak at Beyrouth and in Palestine."
	13	1873 Feb 14	"Strong at Tyre, weak at Beyrouth and in Palestine."
	20	1873 Feb 14	"Several earth shocks in Cairo."
	4	1873 Feb 15	"Nazareth - three shocks."
84	4	1873 Jun 29	"Jerusalem-severe. Jaffa."
	10	1873 Jun 29	Date only. Felt in Jerusalem. $4.3 \leq M_L \leq 5.0$ .
85	4	1874 Mar 3	"Jerusalem-two strong shocks."
	10	1874 Mar 3	Date only. Felt in Jerusalem. $4.3 \leq M_L \leq 5.0$ .
	16	1874	"Jerusalem."
	20	1874	"An apparently harmless earthquake was also felt in Jerusalem."
86	4	1877 Feb 15	"Jerusalem."
	10	1877 Feb 15	Date only. Felt in Jerusalem. $4.3 \leq M_L \leq 5.0$ .
87	4	1877 Mar 14	"Jerusalem."
	10	1877 Mar 14	Date only. Felt in Jerusalem. $4.3 \leq M_L \leq 5.0$ .

TABLE 2.5A-3  
ABSTRACT OF FELT DESCRIPTIONS

CAT. NO	REF.	DATE	COMMENTS
88	4	1879 Dec 31	"Jerusalem."
	10	1879 Dec 31	Date only. Felt in Jerusalem. $4.3 \leq M_L \leq 5.0$ .
	16	1879	"Jerusalem."
	20	1879	"Earthquake in Jerusalem."
89	4	1885 Mar 13	"Jerusalem-slight."
	10	1885 Mar 13	Date only. Felt in Jerusalem. $4.3 \leq M_L \leq 5.0$ .
90	4	1899 Dec 11	"Jerusalem-slight."
	10	1899 Dec 11	Date only. Felt in Jerusalem. $4.3 \leq M_L \leq 5.0$ .
91	4	1893 Jan 12	"Jerusalem."
	10	1893 Jan 12	Date only. Felt in Jerusalem. $4.3 \leq M_L \leq 5.0$ .

Note: For references 12, 13 and 20, comments are free translations of the French or German citations.

## ABBREVIATIONS AND CODES

CAT NO.	Catalog Number
YR	Year
MO	Month
DY	Day
HR	Hour - Origin Time in Greenwich Meridian Time
MN	Minute
SEC	Second
S.D.	Standard Deviation of origin time in seconds
LAT N	Latitude north - degrees
LAT E	Latitude east - degrees
GRID-COORDS	Israel Grid Coordinates X,Y - kilometers
DEPTH	Focal Depth - kilometers
MW	Moment magnitude
M	Magnitude ( $M_C$ , $M_S$ , or $M_I$ )
MB	Body wave magnitude - $m_b$
IO	Epicentral intensity (MM)
REL	Reliability Code: 5 - High 4 - Acceptable 3 - Low 2 - Poor
SRC	Source Code: 0 - Anonymous 1 - One 3-component station, S and P data 2 - Two stations (eliminated from catalog) 3 - Three or more stations, S and P data 4 - ISC (International Seismological Centre) 5 - Jerusalem Catalog 6 - 1 and 2 combined 7 - Ben-Menahem Catalog 8 - Ksara Catalog 9 - Macroseismic evaluation 10 - Network data 11 - Riad and Meyers (1985)
POSS. EXPL.	Possible explosion
PROB. EXPL.	Probable explosion

Table 2.5A-4. Index and Location of Place Names

Name	N	E	Modern Proximity	Cited in Earthquake Catalog No
Aeropolis	31.3	35.8	Al Qasr, Jordan	9
Acre (Akko, Akka)	32.9	35.1	Akko	15,34,38,50,53,67,71,72
Aleppo (Allepo)	36.2	37.2	Haleb, Syria	26,28,47,50,67,76
Alexandria	31.2	29.9	Alexandria, Egypt	16,42,53,82
Amman	32.0	35.9	Amman, Jordan	26
Antakiye	36.1	26.1	Hatay, Syria	67
Antioch (Antioche, Antiocha)	36.1	36.1	Hatay, Syria	6,11,16,26,28,29,33,68,76
Aphek (Antipatris)	32.1	34.9	East of Petah-Tiqva	13(?)
Aphek	38.8	35.7	Afig, Fiq	13
Arad	31.3	35.2	Arad	26
Aram			Gebel-E-Ram (40 km E of Akaba)	5
Ascalon (Askalon, Ashkelon)	31.7	34.5	Ashqelon	23,38,71
Ashdod (Ashod)	31.8	34.6	Ashdod	42
As-Salt (Es-Salt)	32.0	35.7	Salt, Jordan	60

Table 2.5A-4. Index and Location of Place Names (Continued)

Name	N	E	Modern Proximity	Cited in Earthquake Catalog No.
Baalbek (Ba'al Bok)	34.0	36.2	Ba'albek, Lebannon	35,50
Banias (Baniyas, Israel)	33.2	35.7	Banyas, Israel	42,50
Banyas (Syria)	35.2	35.9	Baniyas, Syria	38
Beirut (Beiruth, Beyrouth)	33.9	35.5	Beirut, Lebanon	15,16,50,67,72,76,83
Beit-Jann (Beit Shan)	33.0	35.4	Beit-Jann	21,50
Beit Jibrin	(31.6	34.9)?	Bet Guvrin?	9
Bethlehem	31.7	35.2	Bethlehem	49,60,71,72
Bithynie			Region in northern Turkey	3,4
Bosra (Busra)	32.5	36.5	Busra ash Sham, Syria	50
Botrys	34.3	34.7	Bothrys, Lebannon	16
Byblos	34.1	35.7	Jubayl, Lebannon	15,16
Caesarea (Caesaria)	32.5	34.9	Caesarea	6,7,16,50
Cairo	30.1	31.2	Cairo, Egypt	43,50,51,53,63,83
Cana	32.7	35.3	Kafr Kenna	72
Casium			Not found	2

Table 2.5A-4. Index and Location of Place Names (Continued)

Name	N	E	Modern Proximity	Cited in Earthquake Catalog No.
Chammath	32.8	35.5	Tiberias	1
Damanhur	31.0	30.5	Damanhur, Egypt	53
Damascus (Damas, Damask)	33.5	36.3	Damascus, Syria	26,33,35,50,53,60,67,68,72,82
Deir Mar Saba	31.7	35.3	Deir Mar Saba	71
Der el-Bahla	31.4	34.4	Deir el Balah	38
Edessa	37.1	38.8	Urfa, Turkey	47
Ein-Gedi	31.5	35.4	En Gedi	71
Ein Zeitun	(33.0	35.5)?	En Zetim (founded 1891)?	72
El-Akaba	29.5	35.0	Al Aqaba, Jordan	41
Elat (Eilat, Ailat, Ayla)	29.5	35.0	Elat	5,41,42,51,63
El Jish	33.0	35.4	Jish (Gush Halav)	72
El Ledscha			Volcanic Region East of Yam Kinneret in Jordan	70
El Reina	32.7	35.3	Reina	72
Emmaus	31.8	35.0	Near Latrun	7

Table 2.5A-4. Index and Location of Place Names (Continued)

Name	N	E	Modern Proximity	Cited in Earthquake Catalog No.
Er-Ram	32.9	35.4	Rama, Er-Rame	60
Er-Ramle (Er-Ramale)	31.9	34.9	Ramla	23,42
Gaza (Gasa, Gazza)	31.5	34.5	'Azza, Gaza	9,23,38,50,52,53,60,71,82
Gerasa	32.3	35.9	Jerash, Jordan	26
Haleb	36.2	37.2	Haleb, Syria	67
Hauran			Near Urfa, Turkey	50
Hebron	31.5	35.1	Hebron	12,38,60,72
Heliopolis	34.0	36.2	Ba'albek, Lebanon	68
Hunin	33.2	35.5	Hunin	72
Jaffa (Jafa)	32.0	34.7	Yafo	60,68,72,84
Jerash	32.3	35.9	Jerash, Jordan	26
Jericho	31.9	35.5	Jericho	1,22,26,38
Jerusalem	31.8	35.2	Jerusalem	1,4,5,8,9,24,26,27,28,29,30,33, 37,38,39,40,42,43,44,45,46,47, 48,49,50,58,60,71,72,74,75,76, 77,78,79,80,81,82,83,84,85,86, 87,88,89,90,91
Jisr ed-Damiye	32.1	35.5	Jisr Damiya	60,61



Table 2.5A-4. Index and Location of Place Names (Continued)

Name	N	E	Modern Proximity	Cited in Earthquake Catalog No.
Joppa	32.0	34.7	Yafo	60
Kafr Kenna	37.7	35.3	Kafr Kenna	72
Kerak (Karak, El-Kerak, El-Kerk) Jordan	31.2	35.7	Karah, Jordan	51,52
Kerak, (Kerk, Karak le Krak Crac des Chevaliers) Syria	34.8	36.3	Karak, Hosn el-Akrad, Syria	50,58,60,71
Khan el Ahmar			Monastery of St. Euthymius near Jericho	22
Kh. el Mafjer	31.9	35.4	Near Jericho	26
Khaybar	25.8	39.2	Arabia	42
Khirbet-Shama	33.0	35.5	Kefar Shammay	13
Kir-Hareset	31.2	35.7	Karak, Jordan	7
Kufa	32.0	44.4	Al Kufah, Iraq	42
Laodicea	35.5	35.8	Latakia, Syria	33
Latrun (Nicopolis)	31.8	35.0	Near Latrun	15
Lod	31.9	34.9	Lod	26,52
Lubya			Not found-probably in Galilee	72

Table 2.5A-4. Index and Location of Place Names (Continued)

Name	N	E	Modern Proximity	Cited in Earthquake Catalog No.
Lydda	31.9	34.9	Lod	7,52
Mar Saba Monastery	31.7	35.3	Deir Mar Saba	71
Massada	31.3	35.4	Massada	1
Mecca	21.4	40.0	Arabia	33
Medina	24.5	39.6	Arabia	42
Monastery of the Laura of St. Sabain Sinai			(Sinai)?	64
Nablus (Nablous)	32.2	35.3	Nablus	9,38,50,60,71,72
Nazareth	32.7	35.3	Nazareth	72,82,83
Nicomedia			A city of Bithynie (Balkan region of Turkey)	9
Ricopolis (Emmaus, Imvas)	31.8	35.0	Near Latrun	7,12,14
Pelusium	31.0	32.6	Sinai	2
Petra	30.3	35.4	NW of Ma'an, Jordan	5,9
Ptolemais	32.9	35.1	Akko	15

Table 2.5A-4. Index and Location of Place Names (Continued)

Name	N	E	Modern Proximity	Cited in Earthquake Catalog No.
Qaddita			Not found-probably in Galilee	72
Qala't-el-Gindi	29.8	33.1	Sinai	51
Qumran	31.7	35.5	Qumran	1,4
Qus	25.9	32.7	Qus, Egypt	50
Rabbath Moab (Aeropolis)	31.3	35.8	Al Qasr, Jordan	9
Rama	32.9	35.4	Rama, Er-Rame	60
Ramla (Ramle, Ramlah, Ramleh)	31.9	34.9	Ramla	23,38,42,43,50,52,60
Rani	32.7	35.3	Reina	72
Ras-Chekka	34.3	35.7	Lebanon	16
Rasse	31.5	34.5	"Azza, Gaza	23,71
Safed (Safet, Safad)	33.0	35.5	Zefat	50,53,56,67,68,72
Saffuriya	32.8	35.3	Saffurye	72
Saha	31.2	30.9	Egypt	53
St. Catherine Monastery	28.5	34.0	Sinai	54

Table 2.5A-4. Index and Location of Place Names (Continued)

Name	N	E	Modern Proximity	Cited in Earthquake Catalog No.
St. John Monastery	31.8	34.5	Near Jericho	49
Samandag (Samandang)	36.1	36.0	Samandagi, Turkey	33
Sarde	38.5	28.0	Sardis, Sardes, Turkey	14
Sa'sa	33.3	36.0	Sa'sa, Syria	72
Sasa	33.0	35.4	Sasa, Israel	72?
Schechem	32.2	35.3	Nablus	60
Sejera	32.8	35.4	Ilaniya	72
Seleucia Pieria (Seleuke)	36.1	36.0	Samandagi, Turkey	14
Sharm Yanbu	24.2	37.9	Arabia	42
Sidon	33.6	35.4	Sayda, Lebanon	3,8,15,16,67,72
Sur	33.3	35.2	Sur, Lebanon	8,15,16,50,72,83
Tabarije	32.8	35.5	Tiberias	67,71,72
Tayma	27.6	38.5	Arabia	42
Tel-El-Haleifa	29.5	35.0	Near Elat-Tel el Khalifa (Egyon Gever)	5
Tiberias	32.8	35.5	Tiberias	26,32,38,50,67,71,72

Table 2.5A-4. Index and Location of Place Names (Concluded)

Name	N	E	Modern Proximity	Cited in Earthquake Catalog No.
Tibrin (Tibnin?)	(33.2	35.4)?	Tibnin (?), Lebanon	50
Tinis	31.4	31.8	Near Dumyat, Egypt	42
Tripoli (Tripolis)	34.4	35.9	Tarabulus, Lebanon	16,50,60,67,72
Tyre (Tyr)	33.3	35.2	Sur, Lebanon	8,15,16,50,67,72,83
Tyros	(33.3	35.2)?	Tyre?	16
Yavne	31.9	34.7	Halot Yavne	6,42
Wadi As Safra	24.1	38.9	Arabia	42
Zozilgip			Not found	60