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SIGNIFICANT EARTHQUAKES OF THE WORLD
1990—1995

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SIGNIFICANT EARTHQUAKES OF THE WORLD

1990—1995

INTRODUCTION

This publication is a final listing of all the significant earthquakes for 1990 through 1995. Significant earthquakes are defined for this publication as those of magnitude 6.5 or greater or ones that caused fatalities, injuries or substantial damage. The locations, comments, and other data were taken from the Preliminary Determination of Epicenters Monthly Listing, U.S. Geological Survey. This listing of significant earthquakes was compiled to provide an accurate and readily available summary of the world's most important earthquakes for a given period of time.

SIGNIFICANT EARTHQUAKES OF THE WORLD
1990 - 1995

1990

DATE	ORIGIN TIME			GEOGRAPHIC COORDINATES		DEPTH	MAGNITUDES		SD	NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
	HR	MN	SEC	LAT	LONG		GS	Msz			
FEB 08	07	15	32.2	9.755 N	124.694 E	26 G	6.2	6.6	1.4	322	MINDANAO, PHILIPPINE ISLANDS. Ms 6.5 (BRK), 6.3 (PAS). Mo=1.4*10**19 Nm (GS). Mo=1.5*10**19 Nm (HRV). Mo=3.0*10**19 Nm (PPT). Felt (VII RF) on Bohol; (VI) at Cebu; (V) at Cagayan de Oro and on Camiguin; (IV) at Cotabato and (III) at Palo. Also felt on Negros. Two events about 2 seconds apart.
FEB 08	07	46	59.7	9.725 N	124.625 E	30 D	6.0	6.5	1.2	248	MINDANAO, PHILIPPINE ISLANDS. Mo=8.8*10**18 Nm (HRV). Felt (V RF) on Mactan.
FEB 09	17	57	26.4	31.677 N	121.032 E	10 G	5.0	4.3	1.2	72	EASTERN CHINA. One person injured slightly and minor damage in the Changshu area. Felt at Jiaxing, Nanjing, Nantang, Shanghai and Wuxi.
FEB 19	06	48	10.1	15.465 S	166.385 E	12 G	6.4	6.7	1.2	375	VANUATU ISLANDS. Ms 6.8 (BRK), 6.5 (PAS). Mo=2.2*10**19 Nm (GS). Mo=1.7*10**19 (HRV). Mo=2.0*10**19 Nm (PPT). Two events about 2 seconds apart.
FEB 28	23	43	36.6	34.140 N	117.700 W	5	5.5	5.5		191	SOUTHERN CALIFORNIA. <PAS-P>. ML 5.2 (PAS), 6.2 (BRK). Mo=4.0*10**17 Nm (HRV). Thirty people received minor injuries and damage was estimated to be at least 12.7 million dollars. Some damage (VII) at Claremont, Covina, La Verne, Montclair, Mount Baldy, Ontario, Pomona, San Dimas, Upland and Walnut. Slight damage (VI) at Arcadia, Azusa, Chino, Colton, Compton, Glendora, Lincoln Heights, Lytle Creek, Pico Rivera and West Covina. Felt from Santa Barbara to Ensenada, Mexico and northeast as far as Las Vegas, Nevada.
MAR 03	12	16	27.9	22.122 S	175.163 E	33 G	6.3	7.4	1.3	322	SOUTH OF FIJI ISLANDS. Ms 7.4 (BRK), 7.1 (PAS). Mo=1.3*10**20 Nm (GS), Mo=3.0*10**20 Nm (HRV), Mo=4.0*10**20 Nm (PPT).
MAR 03	12	44	22.4	22.405 S	174.164 E	33 N	6.1	6.6	1.0	156	LOYALTY ISLANDS REGION
MAR 04	19	46	19.6	28.925 N	66.331 E	10 D	5.8	6.1	1.2	339	PAKISTAN. Mo=8.4*10**17 Nm (GS). Mo=1.4*10**18 Nm (HRV). Complex event. At least 11 people killed, about 40 injured and many homes and buildings damaged in the Kalat area. Also felt at Quetta and Mastung.
MAR 05	16	38	12.5	18.318 S	168.063 E	21 G	5.6	7.0	1.2	335	VANUATU ISLANDS. Ms 7.0 (BRK), 6.8 (PAS). Mo=5.3*10**19 Nm (GS). Mo=3.3*10**19 Nm (HRV). Mo=6.0*10**19 Nm (PPT). Felt (V) at Port Vila.
MAR 12	14	41	19.4	51.484 N	175.032 W	14 G	6.0	6.2	1.1	487	ANDREANOF ISLANDS, ALEUTIAN IS. ML 5.7 (PMR). Ms 6.5 (BRK), 5.9 (PAS). Mo=3.5*10**18 Nm (GS). Mo=3.8*10**18 Nm (HRV). Felt (IV) on Adak and Atka.
MAR 25	13	22	55.6	9.919 N	84.808 W	22 G	6.2	7.0	1.1	494	COSTA RICA. Ms 6.8 (BRK). Mo=1.1*10**20 Nm (GS). Mo=7.8*10**19 Nm (HRV). Mo=6.0*10**19 Nm (PPT). Ten people slightly injured. Damage (VIII) in the Puntarenas area and about 60 buildings severely damaged (VII) in the San Jose area. Several landslides blocked roads in the area for a short time. Felt throughout Costa Rica and southwestern Nicaragua. Felt (IV) at Almirante and Puerto Armuelles and (III) at David, Panama.
MAR 26	22	47	16.7	9.253 N	125.606 E	39	5.6	5.5	1.1	190	MINDANAO, PHILIPPINE ISLANDS. Mo=8.0*10**17 Nm (HRV). One person killed, two injured and some damage in the Santiago area. Felt (IV RF) on Camiguin and (II) at Cotabato. Also felt at Gingoog.
APR 02	13	46	31.7	52.314 N	2.985 W	18	4.7		1.3	189	UNITED KINGDOM. ML 5.1 (LDG), 5.2 (BGS). MD 4.8 (STR). Damage (VI) in the Wrexham-Welshpool-Shrewsbury area. Some buildings damaged in Manchester and Liverpool. Felt throughout Wales, in eastern Ireland and in England from Newcastle-upon-Tyne to Kent and Cornwall.
APR 03	22	57	00.9	11.426 N	86.301 W	53	5.5	6.4	1.3	320	NEAR COAST OF NICARAGUA. Ms 6.7 (BRK), 5.9 (PAS). MD 6.6 (UPA), 5.9 (SJR). Mo=1.8*10**19 Nm (HRV). Mo=2.0*10**19 Nm (PPT). Felt (V) at Rivas and (IV) at Managua. Felt throughout much of Nicaragua. Felt (V) at Cuajiniquil and Liberia, (IV) at Puntarenas, (III) at San Jose and (II) at Limon, Costa Rica. Also felt (II) at San Salvador, El Salvador.

1990

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	UTC	HR	MN	SEC	LAT		LONG	GS	MB			Msz		
APR 05	21	12	35.5	15.125	N	147.596	E	11	G	6.5	7.5	1.2	328	MARIANA ISLANDS REGION. Ms 7.3 (PAS), 7.2 (BRK). Mo=6.5*10**19 Nm (GS). Mo=1.6*10**20 (HRV). Mo=3.0*10**20 Nm (PPT). Two events about 6 seconds apart. Felt (IV) on Guam. Also felt on Saipan. A small tsunami was generated with maximum wave heights (peak-to-trough) at selected tide stations as follows: 24 cm at Muroto-misaki, 24 cm at Kailua-Kona, 23 cm on Chichi-shima, 22 cm at Tosashimizu, 19 cm at Yaene, 6 cm on Midway, 4 cm on Wake Island and 3 cm on Truk. A tsunami was also observed on Guam and reported on Tinian and Saipan.
APR 17	01	59	33.4	39.436	N	74.900	E	33	N	6.0	6.2	1.2	277	SOUTHERN XINJIANG, CHINA. Mo=1.1*10**18 Nm (GS). Mo=1.2*10**18 Nm (HRV). Two people injured and many houses collapsed in Wuqia County. Felt at Kashi,
APR 18	13	39	19.0	1.186	N	122.857	E	26	G	6.2	7.4	1.2	294	MINAHASSA PENINSULA. Ms 7.3 (BRK). Mo=1.4*10**20 Nm (GS). Mo=3.3*10**20 Nm (HRV). Mo=2.0*10**20 Nm (PPT). At least 3 people killed and 25 people injured. More than 1,140 houses damaged in the Bolaang-Gorontalo area. Felt strongly throughout the Minahassa Peninsula. Also felt in central Sulawesi. Two events about 4.5 seconds apart.
APR 26	09	37	15.0	35.986	N	100.245	E	8	G	6.5	6.9	1.2	127	QINGHAI PROVINCE, CHINA. Ms 6.7 (BRK), 6.4 (PAS). Mo=1.8*10**18 Nm (GS). Mo=5.6*10**18 Nm (HRV). Mo=8.0*10**18 Nm (PPT). At least 126 people killed, many injured, extensive damage and landslides in the Gonghe-Xinghai area. Also felt in Gansu Province.
APR 28	04	41	48.0	37.885	N	121.983	W	6		4.3			32	CENTRAL CALIFORNIA. <BRK>. ML 4.6 (BRK). At least 40 houses damaged at Alamo. Felt (V) at Concord, Danville, Dublin and Livermore; (IV) at Alameda, Berkeley, Half Moon Bay, Hayward, Hercules, Lafayette, Mount Hermon, Pleasanton, Port Costa, Richmond, San Carlos, San Lorenzo, San Mateo and Watsonville. Also felt strongly at Walnut Creek.
MAY 05	07	21	29.5	40.775	N	15.766	E	10	G	5.3	5.4	1.4	110	SOUTHERN ITALY. MD 5.6 (TTG), 5.5 (TRI), 5.4 (STR). ML 5.3 (LJU), 5.2 (THE). Mo=5.7*10**17 Nm (HRV). Two people died from heart attacks, 16 injured and damage (VII) in the Potenza area. Felt strongly in many parts of southern Italy. Also felt along the coast of Montenegro, Yugoslavia.
MAY 08	00	01	40.0	6.905	N	82.622	W	10	G	6.2	6.3	1.0	462	SOUTH OF PANAMA. Ms 6.5 (BRK). MD 6.1 (UPA), 5.9 (HDC). Mo=5.4*10**18 Nm (GS). Mo=5.8*10**18 Nm (HRV). Mo=8.0*10**18 Nm (PPT). Felt (V) at Santiago; (IV) at David; (III) at Panama City and Chitre. Also felt in much of Costa Rica.
MAY 12	04	50	08.7	49.037	N	141.847	E	606	G	6.5		0.8	697	SAKHALIN ISLAND. mb 6.8 (BRK), 6.2 (PAS). Mo=7.9*10**19 Nm (GS). Mo=8.2*10**19 Nm (HRV). Mo=6.0*10**19 Nm (PPT). Felt (V) at Aniva, Ogonki and Peschanskoye; (IV) in the Korsakov-Nevelsk-Tomari area; (III) in the Uglegorsk-Poronaysk-Makarov area, Sakhalin. Felt (II) at Komsomolsk-na-Amure, USSR. Felt (III JMA) at Kushiro, Hokkaido. Also felt (III JMA) at Hachinohe and Morioka; (II JMA) at Tokyo and Yokohama, Honshu.
MAY 13	04	23	09.6	40.296	S	176.064	E	21	G	6.0	6.3	1.2	395	NORTH ISLAND, NEW ZEALAND. Ms 6.1 (BRK). ML 6.7 (WEL). Mo=4.6*10**18 Nm (GS). Mo=4.6*10**18 Nm (HRV). Mo=5.0*10**18 Nm (PPT). Some damage (VIII) in the Dannevirke area. Felt at Wellington.
MAY 20	02	22	01.6	5.121	N	32.145	E	15	G	6.7	7.1	1.1	494	SUDAN. Ms 7.4 (BRK), 7.2 (PAS). Mo=7.4*10**19 Nm (GS). Mo=5.3*10**19 Nm (HRV). Mo=1.6*10**20 Nm (PPT). Believed to be the largest earthquake ever recorded in Sudan. Some buildings damaged in the Juba area. Also some damage in the Moyo area, Uganda. Felt in the Nakuru area, Kenya and in Uganda.
MAY 24	19	34	44.2	5.277	N	31.829	E	17	G	5.9	6.6	1.1	380	SUDAN. Ms 6.7 (PAS), 6.6 (BRK). Mo=5.1*10**18 Nm (GS). Mo=6.4*10**18 Nm (HRV). Felt in the Juba area. Also felt in the Kapenguria area, Kenya and in Uganda.
MAY 24	20	00	08.1	5.358	N	31.848	E	16	G	6.5	7.0	1.0	404	SUDAN. Ms 7.0 (BRK), 6.9 (PAS). Mo=4.8*10**19 Nm (HRV). Mo=1.1*10**20 Nm (PPT). Some buildings damaged in the Juba area. Felt in the Kapenguria area and at Nakuru, Kenya. Also felt in Uganda.

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	UTC	HR	MN	SEC	LAT		LONG	GS	MB			
MAY 30	02	34	05.8	6.016 S	77.229 W	24 G	6.1	6.5	1.0	461	NORTHERN PERU. Ms 6.6 (BRK), 5.9 (PAS). Mo=8.0*10**18 Nm (GS). Mo=7.7*10**18 Nm (HRV). Mo=1.3*10**19 Nm (PPT). Three events about 1.5 and 4.8 seconds apart respectively. At least 135 people killed, more than 800 injured and severe damage (VI) in the Moyobamba-Rioja area. Felt (V) at Chachapoyas; (IV) at Cajamarca; (III) at Chiclayo and Chimbote. Also felt (IV) at Guayaquil, Ecuador.	
MAY 30	10	40	06.1	45.841 N	26.668 E	89 G	6.7		1.0	648	ROMANIA. mb 7.1 (PAS). Mo=3.0*10**19 Nm (HRV). Mo=7.0*10**19 Nm (PPT). Nine people killed, more than 700 injured and severe damage in the Bucharest-Braila-Brasov area. Additional damage in Moldavia, USSR. One person died of a heart attack and extensive damage in northern Buglaria. Felt (VI) at Silistra and (V) at Sofia, Bulgaria. Felt (VI) at Kishinev; (IV) at Kiev, Lvov, Moscow, Rostov, Sochi and Uzhgorod; (III) at Stavropol and Leningrad, USSR. Also felt in Hungary, Greece, Poland, Turkey and Yugoslavia.	
MAY 31	00	17	47.8	45.811 N	26.769 E	88 G	6.1		1.0	572	ROMANIA. mb 6.5 (PAS), 6.2 (BRK). Mo=3.2*10**18 Nm (HRV). Two events about 2.3 seconds apart. Additional damage in Romania. Felt (V) in northern Bulgaria and at Kishinev, USSR. Felt throughout Bulgaria and in parts of Yugoslavia. Also felt at Lvov, USSR and Istanbul, Turkey.	
JUN 07	09	25	19.1	3.563 S	144.432 E	29 D	5.9	6.5	1.2	140	NEAR NORTH COAST OF PAPUA NEW GUINEA. Mo=4.7*10**18 Nm (GS). Mo=5.8*10**18 Nm (HRV). Mo=1.1*10**19 Nm (PPT). Ms 6.9 (BRK), 6.1 (PAS).	
JUN 09	01	14	34.5	6.062 S	77.136 W	26 D	5.5	4.9	1.0	171	NORTHERN PERU. Mo=2.0*10**17 Nm (HRV). One person killed and at least 14 houses destroyed (VI) in the Rioja-Moyobamba area. Felt (II) at Iquitos.	
JUN 14	07	40	56.2	11.760 N	121.899 E	18 G	6.0	7.1	1.2	283	PANAY, PHILIPPINE ISLANDS. Ms 6.8 (BRK). Mo=3.6*10**19 Nm (GS). Mo=4.7*10**19 Nm (HRV). Mo=6.0*10**19 Nm (PPT). At least four people killed, 15 injured in the Culasi area. Considerable damage in other parts of Panay. Felt (VI RF) at Iloilo; (V RF) at Bacolod, Negros and on Cebu; (III RF) on Camiguin; (II RF) at Sorsogon and (I RF) at Manila, Luzon.	
JUN 14	12	47	28.8	47.869 N	85.076 E	58 G	6.1	6.8	1.0	501	KAZAKH-XINJIANG BORDER REGION. mb 6.5 (PAS). Ms 6.6 (BRK), 6.4 (PAS). Mo=8.6*10**18 Nm (GS). Mo=9.7*10**18 Nm (HRV). One person killed, 3,000 houses destroyed and 20,000 people left homeless in the Ust-Kamenogorsk-Zaysan area, USSR. Damage in Jeminay and Habahe Counties. China. Felt (V) at Novosibirsk, Semipalatinsk and Ust-Kamenogorsk and (III) at Andizhan and Frunze, USSR. Also felt at Urumqi, China.	
JUN 16	02	16	21.1	39.258 N	20.528 E	32 D	5.6	5.2	1.3	389	GREECE-ALBANIA BORDER REGION. MD 5.4 (TTG). Mo=2.5*10**17 Nm (HRV). One person slightly injured and damage in the Preveza area. Felt strongly in much of northwestern Greece and on Kerkira.	
JUN 17	04	51	45.5	27.398 N	65.719 E	15 G	5.9	6.3	1.2	390	PAKISTAN. Ms 6.4 (BRK), 6.2 (PAS). Mo=1.8*10**18 Nm (GS). Mo=1.8*10**18 Nm (HRV). At least six people injured and damage in southern Baluchistan Province. A 13-meter deep fissure was reported in the epicentral area. Felt in the Khuzdar-Surab area.	
JUN 20	21	00	09.9	36.957 N	49.409 E	19 D	6.4	7.7	1.2	352	WESTERN IRAN. Ms 7.7 (BRK), 7.4 (PAS). Mo=1.1*10**20 Nm (GS). Mo=1.4*10**20 Nm (HRV). 2.0*10**20 Nm (PPT). Complex event. Estimated 40,000 to 50,000 people killed, more than 60,000 injured, 400,000 or more homeless and extensive damage and landslides in the Rasht-Qazvin-Zanjan area, Iran. Nearly all buildings were destroyed in the Rudbar-Manjil area. Substantial damage occurred as far away as Khalkhal and Now Shahr and slight damage occurred at Tehran. Felt in most of northwestern Iran, including Arak, Bakhtaran and Tabriz. Slight damage also occurred in southern Azerbaijan, USSR. Felt (VII) at Astra and Lenkoran; (VI) at Dzhibrail, Lerik, Mossony and Yardyshny; (III) at Baku, USSR.	
JUN 21	09	02	14.6	36.636 N	49.799 E	15 G	5.8	5.3	1.1	366	WESTERN IRAN. Mo=4.9*10**17 Nm (HRV). At least 20 people killed and additional damage in the Lowshan-Manjil area.	
JUN 23	21	38	18.7	21.568 S	176.483 W	181 G	6.4		1.0	537	FIJI ISLANDS REGION. mb 6.5 (BRK), 6.4 (PAS). Mo=2.6*10**19 Nm (GS). Mo=2.2*10**19 Nm (HRV). Mo=5.0*10**19 Nm (PPT).	
JUL 06	00	16	20.4	6.904 S	108.120 E	14 G	5.8	4.8	1.4	131	JAVA. Mo=2.2*10**17 Nm (GS). Mo=2.3*10**17 Nm (HRV). At least 103 people injured and about 10,300 houses, mosques and public buildings damaged or destroyed in the Kuningan-Majalenga-Sumedang area.	

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	UTC	HR	MN	SEC	LAT		LONG	GS	MB			
JUL 06	19	34	52.4	36.861 N	49.303 E	35 D	5.3	4.4	0.9	278	WESTERN IRAN. Mo=9.6*10**16 Nm (HRV). Two people injured and two roads blocked by landslides in the Rudbar area. Also felt at Rasht and Tehran.	
JUL 09	15	11	20.3	5.395 N	31.654 E	13 G	5.9	6.4	1.2	387	SUDAN. Ms 6.6 (BRK), 6.3 (PAS). Mo=8.8*10**18 Nm (GS). Mo=3.3*10**18 Nm (HRV). Mo=5.0*10**18 Nm (PPT).	
JUL 13	13	50	25.6	12.925 N	87.723 W	22 D	4.9	5.0	1.1	57	NEAR COAST OF NICARAGUA. Some injured and slight damage (V) in eastern El Salvador. Also felt in southern Honduras.	
JUL 13	14	20	43.4	36.415 N	70.789 E	217 D	5.6		1.1	500	HINDU KUSH REGION. Mo=3.8*10**18 Nm (GS). Mo=1.3*10**17 Nm (HRV). At least 43 mountain climbers were killed on Pik Lenina, USSR by an avalanche which was triggered by the earthquake. Felt (IV) at Dushanbe, Garm, Gezan, Gissar, Khorog, Kulyab, Langar, Leninabad, Namangan and Pyandzh; (III) at Andizhan, Fergana and Ura-Tyube; (II) at Tashkent, USSR.	
JUL 16	07	26	34.6	15.679 N	121.172 E	25 D	6.5	7.8	1.1	487	LUZON, PHILIPPINE ISLANDS. Ms 7.6 (BRK), 7.3 (PAS). Mo=4.1*10**20 Nm (HRV). Mo=8.0*10**20 Nm (PPT). At least 1,621 people killed, more than 3,000 people injured and sandblows in the Baguio-Cabanatuan-Dagupan area. Damage also occurred in Bataan Province and at Manila. Large fissures were observed in the epicentral area. Surface faulting occurred along the Philippine and Digdig faults. Felt (VII RF) in the Manila area, (VI RF) at Santa, (V RF) at Cubi Point and (IV RF) at Callao Caves.	
JUL 17	21	14	43.8	16.495 N	120.981 E	23 G	6.1	6.6	1.3	483	LUZON, PHILIPPINE ISLANDS. Ms 6.0 (PAS). Mo=5.8*10**18 Nm (GS). Mo=6.2*10**18 Nm (HRV). Mo=1.6*10**19 Nm (PPT). Felt in the Manila area.	
JUL 18	11	29	24.9	36.990 N	29.595 E	17 D	5.2	5.1	1.2	346	TURKEY. MD 5.0 (ATH). Mo=2.2*10**17 Nm (HRV). At least 393 houses damaged in the Cameli-Denizli area. Felt in Antalya, Denizli, Isparta and Mugla Provinces.	
JUL 27	12	37	59.5	15.355 S	167.464 E	126 G	6.4		1.0	476	VANUATU ISLANDS. mb 6.9 (BRK). Mo=6.8*10**19 Nm (GS). Mo=7.2*10**19 Nm (HRV). Mo=2.0*10**20 Nm (PPT). Two events about 5 seconds apart. Two people injured and many buildings damaged on Espiritu Santo. Felt (V) at Mont Dzumac, New Caledonia and Suva, Fiji.	
AUG 03	09	15	06.1	47.963 N	84.961 E	33 G	6.0	6.1	1.0	553	KAZAKH-XINJIANG BORDER REGION. Ms 5.8 (BRK), 5.7 (PAS). Mo=2.3*10**18 Nm (GS). Mo=2.0*10**18 Nm (HRV). Mo=2.0*10**18 Nm (PPT). Eight people injured and about 500 buildings destroyed (VII) in the Akkol area, USSR. Felt (IV) at Ust-Kamenogorsk and Semipalatinsk; (III) at Pavlodar and Taldy-Kurgan, USSR. Also felt at Alma-Ata and Borovoy, USSR. Felt strongly in northern Xinjiang Province, China.	
AUG 05	01	34	55.8	29.551 N	137.630 E	496 G	6.0		1.1	466	SOUTH OF HONSHU, JAPAN. mb 6.5 (BRK), 6.3 (PAS). Mo=5.2*10**18 Nm (GS). Mo=5.7*10**18 Nm (HRV). Felt (II JMA) in parts of Honshu.	
AUG 11	02	59	54.9	0.059 S	78.449 W	5 G	5.0	4.4	1.2	136	ECUADOR. Mo=9.4*10**16 Nm (HRV). At least 4 people killed, 10 injured, 1,300 houses damaged and landslides in the Pomasqui area. Felt strongly at Quito.	
AUG 12	21	25	21.9	19.435 S	169.132 E	140 G	6.3		1.1	551	VANUATU ISLANDS. mb 6.6 (PAS). Mo=3.9*10**19 Nm (GS). Mo=4.3*10**19 Nm (HRV). Two events about 4 seconds apart. Felt on Efate, Vanuatu and on Ouvea, Loyalty Islands. Felt (III) at Noumea, New Caledonia.	
AUG 17	13	07	17.4	11.164 S	161.997 E	29 G	5.9	6.8	1.4	334	SOLOMON ISLANDS. Ms 6.7 (BRK), 6.7 (PAS). Mo=1.1*10**19 Nm (GS). Mo=1.3*10**19 Nm (HRV). Mo=1.3*10**19 Nm (PPT). Felt at Honiara and Kirakira.	
SEP 23	20	33	49.7	6.726 S	130.373 E	33 N	4.9	6.5	1.1	35	BANDA SEA	
SEP 23	21	13	07.4	33.267 N	138.643 E	10 G	6.0	6.5	1.3	286	SOUTH OF HONSHU, JAPAN. Ms 6.3 (BRK), 5.9 (PAS). Mo=7.2*10**18 Nm (GS). Mo=7.1*10**18 Nm (HRV). Mo=6.0*10**18 Nm (PPT). Complex event. Felt (III JMA) on Hachijo-jima and Miyake-jima and in the Osaka-Owase-Yokkaichi area, Honshu. A slight tsunami was reported on Hachijo-jima and Oshima.	
SEP 26	23	08	23.9	28.014 S	26.727 E	5 G	5.4	4.2	0.9	157	REPUBLIC OF SOUTH AFRICA. Mo=3.6*10**16 Nm (HRV). Two people killed and five injured in a mine in the Welkom area. Slight damage in the Welkom area.	

1990

DATE	ORIGIN TIME UTC HR MN SEC	GEOGRAPHIC COORDINATES LAT LONG		DEPTH	MAGNITUDES GS MB Msz	SD	NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
OCT 10	05 54 53.5	23.497 S	179.029 E	549 G	6.0	0.9	483	SOUTH OF FIJI ISLANDS. mb 6.6 (PAS), 6.5 (BRK). Mo=1.3*10**18 Nm (GS). Mo=1.4*10**18 Nm (HRV).
OCT 15	01 35 44.5	2.211 S	92.249 E	32 D	5.9 6.5	1.0	432	SOUTHWEST OF SUMATERA. Ms 6.4 (PAS). Complex event. Mo=1.6*10**19 Nm (GS). Mo=1.4*10**19 Nm (HRV). Mo=4.0*10**18 Nm (PPT).
OCT 17	14 30 13.1	10.970 S	70.776 W	599 G	6.7	1.0	608	PERU-BRAZIL BORDER REGION. mb 6.8 (BRK), 6.8 (PAS). Mo=3.6*10**19 Nm (GS). Mo=3.2*10**19 Nm (HRV). Mo=3.0*10**19 Nm (PPT). Slight damage at Rio Branco, Brazil. Felt (IV) at Pucallpa, Peru and (III) at La Paz, Bolivia.
OCT 18	09 30 44.4*	26.390 S	27.349 E	5 G	4.0	1.1	6	REPUBLIC OF SOUTH AFRICA. mbLg 4.0 (BUL). ML 3.8 (PRE). At least 9 people killed, one missing and 6 injured in a mine near Carletonville. Probable rockburst.
OCT 20	08 07 27.5	37.093 N	103.781 E	12 D	5.6 5.8	1.4	268	GANSU PROVINCE, CHINA. Mo=4.7*10**17 Nm (HRV). One person killed, two injured and damage in the Tianzhu area. Felt at Lanzhou.
OCT 25	04 53 59.9	35.121 N	70.486 E	114 G	6.0	1.0	444	HINDU KUSH REGION. Mo=6.6*10**17 Nm (GS). Mo=6.3*10**18 Nm (HRV). Eleven people killed, more than 250 injured and damage in the Chitral-Mardan-Malakand area, Pakistan. Felt throughout northern and central Pakistan. Also felt in northwestern India. Felt (IV) at Ishkashim; (III) at Andizhan, Dushanbe, Dzhirgatal, Fergana, Khorog, Kulyab, Nurek and Tashkent; (II) at Samarkand, USSR.
NOV 06	18 45 52.2	28.251 N	55.462 E	11 G	6.2 6.7	1.0	558	SOUTHERN IRAN. Ms 6.7 (BRK), 6.2 (PAS). Mo=5.3*10**18 Nm (GS). Mo=8.3*10**18 Nm (HRV). Mo=1.3*10**19 Nm (PPT). At least 22 people killed, 100 injured, 21,000 homeless and 18 villages severely damaged in the Darab area.
NOV 06	20 14 29.7	53.452 N	169.871 E	25 G	6.3 7.0	0.9	561	KOMANDORSKY ISLANDS REGION. Ms 6.8 (BRK), 6.5 (PAS). Mo=4.6*10**19 Nm (GS). Mo=5.8*10**19 Nm (HRV). Mo=5.0*10**19 Nm (PPT). Two events about 1.5 seconds apart. Felt (IV) on Attu and Shemya.
NOV 15	02 34 32.4	3.908 N	97.457 E	48 D	6.0 6.8	1.1	433	NORTHERN SUMATERA. Ms 6.8 (BRK), 6.7 (PAS). Mo=8.5*10**18 Nm (GS). Mo=1.2*10**19 Nm (HRV). Mo=1.6*10**19 Nm (PPT). Complex event. At least 1 person killed, 32 injured and estimated 2.1 million U.S. dollars damage caused in the Blangkejeren-Kutacane-Medan area. Landslides occurred in the epicentral area. Felt at Banda Aceh and Lhokseumawe. Also felt at Ipoh, Keland, Kuala umpur, Pinang and Taiping, Malaysia and Bangkok and Phuket, Thailand.
NOV 27	04 37 58.5	43.853 N	16.633 E	24 D	5.1 5.6	1.1	381	YUGOSLAVIA. ML 5.6 (ZAG), 5.6 (KBA), 5.5 (TTG). Mo=2.6*10**17 Nm (HRV). Ten people injured and damage (VIII) in the Dinara Mountains. Felt (IV) at Titograd, Niksic, Budva and Herceg Novi. Also felt at Belgrade. Landslides stopped rail traffic on main line between Split and central Yugoslavia. Felt (IV) at Trieste, Italy. Also felt at Pordenone and Trento, Italy.
DEC 01	18 09 28.8	40.854 N	73.553 E	29 D	5.0 4.6	0.9	165	KIRGHIZ SSR. Mo=8.3*10**16 Nm (HRV). Approximately 3,000 people homeless, 1,100 houses and 10 schools damaged (VI) in the Uzgen area. One hundred kilometers of roads were impaired in the epicentral area. Felt (V) at Dzhahalal-Abad; (IV) at Osh and Namangan; (III) at Fergana, Andizhan and Alma-Ata; (II) at Tashkent. Also felt at Frunze.
DEC 03	05 47 19.9*	40.740 N	73.710 E	33 N	5.0	1.2	16	KIRGHIZ SSR. Additional damage (V) to the event of 12-01-90. Felt (V) at Uzgen and (IV) at Frunze and Kok-Yangak.
DEC 13	00 24 25.7	37.300 N	15.438 E	11	5.5 5.3	1.4	367	SICILY. MD 5.6 (TRI), 5.3 (TTG), 5.2 (THE). Mo=3.3*10**17 Nm (HRV). Mo=4.0*10**17 Nm PPT. At least 19 people killed, about 200 injured, 2,500 homeless and severe damage (VII) in the Carlentini area. Damage also occurred at Augusta, Lentini and Noto and slight damage occurred as far away as Cefalu. Felt as far west as Trapani.

1990

DATE	ORIGIN TIME UTC HR MN SEC	GEOGRAPHIC COORDINATES LAT LONG		DEPTH	MAGNITUDES GS MB Msz		SD	NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
DEC 13	03 01 48.0	23.916 N	121.636 E	12 D	5.9 6.2	1.2	315	TAIWAN. Mo=1.2*10**19 Nm (GS). Mo=3.2*10**18 Nm (HRV). Mo=3.0*10**18 Nm (PPT). At least 2 people killed and 3 people injured. Damage (IV JMA) at Hualien. Also felt (IV JMA) at Taipei, (III JMA) at Chiaai, Hsinchu and Ilan, (II JMA) at Chilung and Taitung and (I JMA) at Kaohsiung.	
DEC 16	22 18 49.8	29.044 N	51.304 E	15 D	5.3 5.4	1.2	257	SOUTHERN IRAN. Mo=4.1*10**17 Nm (HRV). Sixteen people injured and some damage and landslides in the Borazjan area.	
DEC 21	06 57 42.9	41.004 N	22.300 E	13 G	5.8 5.9	1.1	423	YUGOSLAVIA. Mo=1.7*10**18 Nm (HRV). One person killed, at least 60 injured and damage in the Edhessa-Kilkis area, Greece. Several people injured and some buildings damaged (VII) in the Gevgelija-Strumica area. Felt (VII) at Begorci and Dojran; (VI) at Kavadarci and Strumica; (V) at Bitola, Stip, Berovo, Ohrid and Titov Veles; (IV) at Skopje, Gostivar, Tetovo and Kumanovo. Felt at Larisa, Greece and Korca, Pogradeci and Tirana, Albania. Also felt at Mikhailovgrad and Plovdiv and (IV) at Sofia, Bulgaria. Felt (III) at Bucharest, Romania.	
DEC 22	17 27 54.8	9.869 N	84.302 W	17	5.3 5.7	0.9	188	COSTA RICA. Ms 6.1 (BRK). Mo=1.0*10**18 Nm (HRV). One person killed at Alajuela, one person died of a heart attack and about 350 people injured in central Costa Rica. Damage (VIII) at Santiago de Puriscal, (VII) at Alajuela and (VI) at Heredia and San Jose. Felt (VII) at Naranjo, Grecia and Aosta; (VI) at San Ramon, (V) at Cartago, Puntarenas and Paraiso, (IV) at San Isidro del General and Turrialba; (III) at La Fortuna de San Carlos, Canas and Siquirres; (II) at Sixaola, Los Chiles, Limon, Barra del Colorado, Liberia and Golfito. Felt throughout Costa Rica and in western Panama.	
DEC 30	19 14 18.9	5.097 S	150.967 E	179 G	6.6	1.2	341	NEW BRITAIN REGION. Mo=2.0*10**20 Nm (GS). Mo=1.8*10**20 Nm (HRV). Mo=8.0*10**19 Nm (PPT). Two events about 6 seconds apart. Some damage in the Hoskins area. Felt at Port Moresby and many fatalities, injuries or substantial damage.	
1991									
JAN 01	00 06 31.4	18.068 N	105.847 W	35	5.5 6.2	1.2	145	OFF COAST OF JALISCO, MEXICO. Ms 6.6 (BRK). Mo=2.8*10**18 Nm (HRV). Mo=6.0*10**18 Nm (PPT).	
JAN 05	14 57 11.5	23.613 N	95.901 E	20 D	6.2 7.1	1.3	400	BURMA. Ms 7.3 (BRK), 7.0 (PAS). Mo=2.4*10**19 Nm (GS). Mo=3.1*10**19 Nm (HRV). Mo=4.0*10**19 Nm (PPT). Thirty-two buildings and 380 hectares of farmland damaged in the Thabeikkyin area. Some landslides reported. Felt strongly at Mandalay. Felt in much of northwestern Burma from Hkamti to Sittwe. Also felt in the Silchar area, India and in Thailand from Chiang Mai to Bangkok.	
JAN 31	23 03 33.6	35.993 N	70.423 E	142 G	6.4	1.2	530	HINDU KUSH REGION. mb 6.6 (BRK). Mo=1.4*10**19 Nm (GS). Mo=2.2*10**19 Nm (HRV). Mo=1.6*10**19 Nm (PPT). Estimated 200-400 people killed, many injured and many homes destroyed or damaged in Konar, Nangarhar and Badakhshan Provinces, Afghanistan. At least 300 people killed, hundreds injured and several thousand houses damaged in the Malakand-Chitral-Peshawar area, Pakistan. Three people died of heart attacks, severe damage (VII) and landslides occurred in the Khorog area, USSR. Felt (VI) at Ishkashim, Parkhar, Dushanbe, Garm, Dzhirgatal, Lyangar and Gissar; (V) at Shaartuz, Sherkent, Gezan, Leninabad, Tashkent and Namangan; (IV) at Chimkent; (III) at Dzhabul and Frunze, USSR. Felt throughout northeastern Afghanistan, northern Pakistan and northern India as far away as Delhi. Also felt throughout Tajikistan and eastern Uzbekistan, USSR.	
FEB 09	16 18 58.3	9.929 S	159.139 E	10 G	6.4 6.9	1.1	334	SOLOMON ISLANDS. Ms 6.8 (BRK), 6.7 (PAS). Mo=2.8*10**19 Nm (HRV). Mo=2.0*10**19 Nm (PPT). Complex event. Minor damage at Honiara. Felt strongly on Guadalcanal. Felt in the Florida Islands, on Malaita and in western San Cristobal. A small tsunami was generated with maximum wave height 4 cm (peak-to-trough) at Honiara.	
FEB 12	09 54 58.3	40.816 N	28.878 E	10 G	4.8 4.6	1.3	183	TURKEY. ML 5.0 (ATH). MD 4.7 (THE), 4.5 (ISK). A few people injured slightly and minor damage in the Istanbul area. Felt at Balikesir, Bursa and Kutahya.	
FEB 13	15 49 38.9	44.885 N	6.760 E	5 G		0.9	107	FRANCE. ML 3.8 (LDG), 3.7 (GEN). MD 3.6 (STR). Nine people killed by an avalanche which was triggered by the earthquake.	
FEB 18	02 37 25.1	8.870 N	126.480 E	24 G	6.0 6.6	1.3	319	MINDANAO, PHILIPPINE ISLANDS. Ms 6.6 (BRK), 6.1 (PAS). Mo=3.8*10**19 Nm (GS). Mo=1.6*10**19 Nm (GS). Mo=2.0*10**19 Nm (PPT). Felt (III RF) at Cagayan de Oro, Bislig and on Mactan and (I RF) at Cotabato.	

1991

DATE	ORIGIN TIME UTC HR MN SEC	GEOGRAPHIC COORDINATES LAT LONG	DEPTH	MAGNITUDES GS MB Msz	SD	NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
FEB 21	02 35 34.0	58.427 N 175.450 W	20 G	6.2 6.5	1.0	472	BERING SEA. Ms 6.7 (BRK), 6.4 (PAS). Mo=7.2*10**18 Nm (GS). Mo=1.1*10**19 Nm (HRV). Mo=3.0*10**19 Nm (PPT). Two events about 3.7 seconds apart. Depth based on the first event. Believed to be the largest earthquake ever located in this area. Felt (IV) on St. Paul in the Pribilof Islands, Alaska. Felt (III) on Adak in the Andreanof Islands, Alaska. A small tsunami was generated with maximum wave heights (peak- to-trough) of 30 cm. at Dutch Harbor and 22 cm at Adak.
FEB 25	14 30 27.6	40.386 N 78.959 E	21 D	5.5 6.1	1.0	289	SOUTHERN XINJIANG, CHINA. Mo=1.3*10**18 Nm (HRV). Three people were injured and at least 120 houses collapsed and 8,441 houses damaged in the Kalpin area. Ground cracks and earthquake lights were reported in the epicentral area. Felt at Akqi, Aksu, Bachu and Wasi.
MAR 08	11 36 28.4	60.904 N 167.023 E	13 G	6.4 6.6	1.3	492	EASTERN SIBERIA. Ms 6.6 (BRK), 6.4 (PAS). Mo=7.9*10**18 Nm (GS). Mo=1.0*10**19 Nm (HRV). Mo=3.0*10**19 Nm (PPT). Believed to be the largest earthquake ever located in this area.
MAR 25	18 02 41.5	39.887 N 113.923 E	10 G	5.1 5.5	1.2	108	NORTHEASTERN CHINA. ML 5.5 (BJI). Mo=1.6*10**17 Nm (HRV). One hundred thirty-one people injured and 1,328 houses damaged in the Datong area.
APR 04	15 23 20.7	6.038 S 77.130 W	21 G	6.0 6.3	1.0	356	NORTHERN PERU. Ms 6.4 (BRK), 5.9 (PAS). Mo=5.5*10**18 Nm (GS). Mo=4.5*10**18 Nm (HRV). Mo=5.0*10**18 (PPT). At least 10 people injured and 15 houses damaged (V) in the Rioja-Nueva Cajamarca area. Felt (V) at Moyobamba and Tarapoto, (IV) at Chachapoyas and (III) at Chiclayo, Trujillo and Piura. Also felt (III) in El Oso Province and (II) at Guayaquil and Quito, Ecuador.
APR 05	04 19 49.5	5.982 S 77.094 W	20 G	6.5 6.8	1.0	534	NORTHERN PERU. Ms 6.7 (BRK), 6.4 (PAS). Mo=2.8*10**19 Nm (GS). Mo=5.1*10**19 Nm (HRV). Mo=5.0*10**19 Nm (PPT). Two events about 6 seconds apart. Depth based on second event. Fifty-three people killed, 252 injured and extensive damage (VII) to 8,063 homes in the Rioja-Moyobamba-Nueva Cajamarca area. Felt (VI) at Tarapoto, (V) at Chiclayo, (IV) at Trujillo and (II) at Lima. Felt throughout northern Peru. Felt (IV) at Guayaquil and (III) at Quito, Ecuador. Felt strongly in much of southern Ecuador.
APR 06	14 34 20.7	15.008 S 175.521 W	16 D	5.8 6.7	1.1	233	TONGA ISLANDS. Ms 6.4 (BRK), 6.1 (PAS). Mo=1.1*10**19 Nm (GS). Mo=1.1*10**19 Nm (HRV). Mo=3.0*10**19 Nm (PPT).
APR 18	09 18 30.4	37.457 N 68.273 E	33 N	5.4 5.1	1.0	193	AFGHANISTAN-USSR BORDER REGION. Mo=2.0*10**17 Nm (HRV). Several people killed and many injured in Badakhshan Province, Afghanistan. One person killed, 6 injured and about 1,000 buildings damaged (VII) in the Kabodiyen district, USSR. Landslides occurred in the Bogi-Dzhud area. Felt (VI) at Shaartuz, (IV) at Kolkhozabad and Leninskiy and (III) at Dushanbe, USSR.
APR 22	21 56 51.8	9.685 N 83.073 W	10 G	6.3 7.6	1.2	432	COSTA RICA. Ms 7.4 (BRK), 6.9 (PAS). Mo=4.0*10**20 Nm (PPT). Forty-seven people killed, 109 injured, 7,439 homeless and severe damage (IX) in the Limon-Pandora area. Intensity X was observed in some zones of liquefaction within the epicentral area. Some damage (VI) also occurred in the San Jose-Alajuela area and landslides blocked roads between Limon and central Costa Rica. Twenty-eight people killed, 454 injured, 2,400 homeless and 866 buildings destroyed (VII-VIII) in the Guabito- Almirante-Bocas del Toro area, Panama. Slight damage (VI) also occurred at David and Puerto Armuelles, Panama. Felt (IV) at Colon and (III) at Panama City. Felt (III) in eastern El Salvador and (II) at San Salvador. Also felt in Nicaragua and Honduras and on San Andres Island, Colombia. Maximum uplift of 1.4 meters was observed near Limon and sandblows and liquefaction caused subsidence of soils in the Bocas del Toro area. Ground cracks also occurred in the epicentral area. A 2-meter tsunami with maximum runup of 300 meters was observed in the Cahuita- Puerto Viejo area, Costa Rica. Tsunamis were also reported on Bastimentos, Carenero and Colon Islands and at Portobelo, Panama. The maximum amplitude of the tsunami in Panama was about 0.6 m. A 7-cm tsunami (peak-to-trough) was recorded on the tide gauge at Cristobal, Panama. Damage in Costa Rica estimated to be about 43 million U.S. dollars.
APR 24	10 54 35.7	39.597 N 41.118 E	33 N	4.5	0.8	48	TURKEY. One person killed, 3 injured and some houses damaged in Erzurum Province.
APR 29	09 12 48.1	42.453 N 43.673 E	17 G	6.2 7.0	1.2	500	WESTERN CAUCASUS. Ms 7.3 (BRK), 6.9 (PAS). Mo=3.3*10**19 Nm (HRV). Mo=8.0*10**19 Nm (PPT). Two events about three seconds apart. Depth based on second event. At least 114 people killed, about 1,000 injured, 70 missing, 67,000 homeless and severe damage (VIII) and landslides in the Dzhava-Chiatura-Ambrolauri area, USSR with 95 percent of buildings destroyed in the area. Felt (VI) in the Kutaisi area; (V) at Leninakan and Tbilisi; (IV) at Kirovakan and Spitak. Felt throughout the western Caucasus and Trans-Caucasus from Sukhumi to Grozny and Yerevan, USSR. Landslides created a natural dam on the Patas River. This was breached several days later, causing additional damage in the Dzhava-Tskhinvali area. Also felt in Ardahan, Artvin, Kars and Rize Provinces, Turkey.

DATE	ORIGIN TIME			GEOGRAPHIC COORDINATES		DEPTH	MAGNITUDES			SD	NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
	HR	MN	SEC	LAT	LONG		GS	MB	Msz			
MAY 03	20	19	38.8	42.683 N	43.247 E	10 G	5.3	5.2	1.2	272	WESTERN CAUCASUS. Mo=3.1*10**17 Nm (HRV). At least 3 people killed by landslides in Georgia, USSR.	
MAY 04	03	42	54.5	9.542 N	82.418 W	10 G	5.6	6.2	1.3	256	PANAMA-COSTA RICA BORDER REGION. Ms 6.2 (BRK). Mo=2.1*10**18 Nm (HRV). Mo=3.0*10**18 Nm (PPT). Thirty-six people injured, 400 families homeless, ground cracks and liquefaction in the Changuinola-Almirante-Bocas del Toro area, Panama. Felt strongly at Limon, Costa Rica. Felt from the Central Valley of Costa Rica as far east as Santiago, Panama.	
MAY 19	00	58	01.7	1.156 N	122.957 E	33 N	6.0	6.8	1.2	228	MINAHASSA PENINSULA. Ms 6.9 (BRK). Mo=3.2*10**19 Nm (GS). Mo=2.5*10**19 Nm (HRV). Mo=3.0*10**19 Nm (PPT). Felt (III) in the Manado area. Two events about 4.5 seconds apart.	
MAY 26	10	59	48.9	5.865 N	116.746 E	33 N	5.1	4.5	1.1	88	KALIMANTAN. One person died from shock and there was slight damage at Ranau, Malaysia. Felt at Melapap, Kota Kinabulu, Papar and along parts of the west coast of Sabah, Malaysia.	
MAY 26	12	26	00.2	40.730 N	15.765 E	8	5.1	4.8	1.1	207	SOUTHERN ITALY. ML 5.2 (ZAG), 5.0 (TTG). A few people injured and minor damage in the Potenza area. Felt in the Avellino-Matera-Naples area. Also felt at Salerno and Bari.	
MAY 27	18	40	27.9	9.482 N	82.694 W	10 G	5.0	5.0	1.1	53	PANAMA-COSTA RICA BORDER REGION. MD 5.1 (SJR). Mo=3.8*10**17 Nm (HRV). Several people injured slightly and damage (IV) at Changuinola, Panama. Felt (IV) on Bocas del Toro and Carenero Islands and (III) at Volcan and David, Panama. Also felt in Costa Rica.	
MAY 30	13	17	41.9	54.567 N	161.606 W	28 G	6.3	6.7	1.1	584	ALASKA PENINSULA. Ms 6.8 (BRK). Mo=1.9*10**19 Nm (GS). Mo=3.1*10**19 Nm (HRV). Mo=1.8*10**19 Nm (PPT). Felt (V) at Cold Bay, King Cove and Sand Point; (IV) at False Pass and Perryville; (III) at Chignik Lagoon.	
JUN 10	17	35	49.4	23.771 N	45.368 W	10 G	6.1	6.5	0.8	557	NORTH ATLANTIC RIDGE. Ms 6.8 (BRK). Mo=5.3*10**18 Nm (GS). Mo=3.3*10**18 Nm (HRV). Mo=6.0*10**18 Nm (PPT).	
JUN 15	00	59	20.3	42.461 N	44.009 E	9 G	6.1	6.1	1.2	458	WESTERN CAUCASUS. Ms 6.5 (BRK). Mo=1.5*10**18 Nm (GS). Mo=2.9*10**18 Nm (HRV). Mo=4.0*10**18 Nm (PPT). Two events about 2 seconds apart. Depth based on second event. At least 8 people killed, 200 injured and extensive damage (VIII) in the Dzhava-Tskhinvali area, USSR. Felt (VI) at Kutaisi, Sukhumi and Tbilisi and (V) in northwestern Azerbaijan. Landslides occurred at Khieti.	
JUN 15	01	13	21.4	58.285 S	24.183 W	52 D	5.8	6.5	1.2	190	SOUTH SANDWICH ISLANDS REGION. Ms 6.3 (BRK). Mo=2.7*10**18 Nm (GS). Mo=7.7*10**18 Nm (HRV). Mo=5.0*10**18 Nm (PPT).	
JUN 15	11	15	28.0	15.119 N	120.355 E	10 G	5.7	5.5	1.0	213	LUZON, PHILIPPINE ISLANDS. Mo=2.8*10**17 Nm (HRV). Felt at Manila. This is the largest of a series of earthquakes associated with the eruption of Pinatubo Volcano. At least 137 people were killed and extensive damage was caused in Zambales Province by the eruptions.	
JUN 20	05	18	52.5	1.196 N	122.787 E	31 G	6.2	7.0	1.2	367	MINAHASSA PENINSULA. Ms 7.2 (BRK). Mo=1.6*10**20 Nm (GS). Mo=2.3*10**20 Nm (HRV). At least 1,500 houses were damaged (VI) in the Gorontalo area. Felt (IV) in the Manado area and (II) at Poso.	
JUN 21	06	27	39.9	13.399 N	89.618 W	77	5.3		1.1	249	EL SALVADOR. Mo=6.3*10**17 Nm (HRV). Mo=1.0*10**18 Nm (PPT). One person killed and three injured when a short circuit caused a fire in a home in the San Salvador area. Felt (IV) at San Salvador. Felt lightly in Guatemala City, Guatemala.	
JUN 28	14	43	54.5	34.262 N	118.002 W	11	5.8	5.1		297	SOUTHERN CALIFORNIA. <PAS-P>. ML 5.4 (PAS), 5.7 (BRK). Mo=3.5*10**17 Nm (HRV). Mo=3.0*10**17 Nm (PPT). One person killed at Arcadia and one person died from a heart attack at Glendale. At least 100 people were injured although most involved only minor cuts and bruises. Damage in the Arcadia, Monrovia, Pasadena, San Marino and Sierra Madre areas estimated at 33.5 million dollars. Maximum intensity VII at Arcadia, Monrovia, Pasadena and Sierra Madre. Some rockslides occurred on mountain roads. Felt strongly throughout much of southern California from Santa Barbara to San Diego and east as far as the Palm Springs-Indio area.	

1931

DATE	ORIGIN TIME			GEOGRAPHIC COORDINATES		DEPTH	MAGNITUDES			SD	NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
	UTC	HR	MN	SEC	LAT		LONG	GS	MB			
JUL 04	11	43	10.4	8.099 S	124.681 E	29	6.2	6.5	1.1	328	TIMOR. Mo=2.3*10**19 Nm (GS). Mo=1.5*10**19 Nm (HRV). Mo=2.0*10**19 Nm (PPT). Two events about 2.5 seconds apart. Twenty-three people killed, 181 injured, at least 5,400 left homeless and about 1,150 buildings destroyed at Kalabahi, Alor. Estimated 7.7 million U.S. dollars damage occurred in the epicentral area. Felt at Dili.	
JUL 06	12	19	49.5	13.108 S	72.187 W	105 G	6.2		1.2	449	PERU. mb 6.5 (BRK). Mo=3.1*10*19 Nm (GS). Mo=1.8*10**19 Nm (HRV). Mo=1.3*10**19 Nm (PPT). Two events about 4 seconds apart. Some damage (VI) at Cuzco. Felt (V) at Abancay. Also felt at Lima and Ica. Felt (II) at La Paz, Bolivia.	
JUL 12	10	42	21.2	45.364 N	21.057 E	11 D	5.3	5.7	1.3	298	ROMANIA. MD 5.3 (TTG), 5.3 (TRI). ML 5.2 (BRA), 5.0 (KRA). Mo=2.5*10**17 Nm (HRV). At least 2 people killed, 30 injured and some buildings damaged (VIII) in the Banloc-Deta-Timisoara area. Slight damage at Belgrade, Yugoslavia. Felt in Subotica-Nis area, Yugoslavia. Also felt at Sofia, Bulgaria and Szeged, Hungary.	
JUL 13	02	50	14.6	42.182 N	125.641 W	11 G	6.2	6.9	1.0	535	OFF COAST OF OREGON. ML 6.7 (BRK). Mo=1.9*10**19 Nm (GS). Mo=2.1*10**19 Nm (HRV). Mo=3.0*10**19 Nm (PPT). Felt (V) at Coquille, Harbor and Reedsport, Oregon. Felt (IV) at Bandon, Coos Bay, Langlois, Ophir, Port Orford and Wedderburn, Oregon. Also felt (IV) at Crescent City and Klamath, California. Felt throughout much of western Oregon and northern California.	
JUL 18	11	56	30.6	44.888 N	22.407 E	12 G	5.7	5.5	1.2	436	ROMANIA. Ms 5.6 (BRK). ML 5.5 (TTG). Mo=1.3*10**17 Nm (GS). Mo=2.9*10**17 Nm (HRV). At least 615 houses damaged (VIII) in the Orsova area. Landslides occurred in the epicentral area. Felt strongly in western Romania and (IV) in northwestern Bulgaria. Also felt in southeastern Hungary and in parts of Yugoslavia.	
JUL 23	19	44	50.2	15.679 S	71.574 W	5 G	5.0	4.7	1.3	51	SOUTHERN PERU. Mo=9.1*10**16 Nm (HRV). At least 12 people killed, 30 injured and about 80 missing in the Maca-Chivay area. Felt (V) at Maca, Yanque, Ichupampa and Achoma. Felt (II) at Arequipa. Landslides occurred in the epicentral area.	
JUL 24	09	45	41.8	36.520 N	44.066 E	26 D	5.4	5.1	1.1	273	IRAN-IRAQ BORDER REGION. Mo=2.2*10**17 Nm (HRV). At least 20 people killed, many injured; at least 100 houses destroyed and many damaged in the Arbil-Dibs area, Iraq. Felt at Mahabad and Piranshahr, Iran.	
AUG 14	19	15	03.6	13.593 S	167.607 E	14 G	6.1	6.6	1.3	355	VANUATU ISLANDS. Mo=6.6*10**18 Nm (HRV). Mo=2.0*10*d19 Nm (PPT).	
AUG 17	19	29	40.0	40.235 N	124.348 W	12	6.0	6.2		507	NEAR COAST OF NORTHERN CALIF. <BRK>. ML 6.0 (BRK). Mo=3.3*10**18 Nm (GS). Mo=1.9*10**18 Nm (HRV). Mo=3.0*10**18 Nm (PPT). Damage (VII) at Honeydew and Whitethorn. Slight damage (VI) at Garberville, Myers Flat and Piercy. Also slight damage and landslides in the Petrolia area. Felt (V) at Alderpoint, Carlotta, Covelo, Fields Landing, Finley, Fortuna, Fort Bragg, Leggett, Loleta, Manchester, Phillipsville, Redcrest, Redway, Rio Dell, Salyer, Weott, Westport, Willits and Zenia. Felt from Grants Pass, Oregon south as far as Sacramento and San Francisco.	
AUG 17	22	17	14.6	41.821 N	125.397 W	14 G	6.2	7.1	1.2	431	OFF COAST OF NORTHERN CALIFORNIA. ML 6.8 (BRK). Mo=2.3*10**19 Nm (GS). Mo=4.4*10**19 Nm (HRV). Mo=6.0*10**19 Nm (PPT). Felt (V) at Klamath, Phillipsville, Rio Dell and Trinidad; (IV) at Bridgeville, Fortuna, Myers Flat and Whitethorn. Also felt (V) at Lakeside, North Bend and Pistol River, Oregon; (IV) at Coos Bay, Coquille, Murphy, Reedsport, Rogue River, Roseburg, Sixes and Scottsburg, Oregon. Felt as far as Sacramento, California and Eugene, Oregon.	
SEP 18	09	48	13.1	14.646 N	90.986 W	5 G	5.7	6.1	1.3	271	GUATEMALA. Ms 6.2 (BRK). Mo=2.1*10**18 Nm (GS). Mo=2.2*10**18 Nm (HRV). Mo=3.0*10**18 Nm (PPT). At least 25 people killed, more than 200 injured, 1,000 homeless and extensive damage in the Pochuta-Solola area. Landslides blocked many roads in the epicentral area. Felt (IV) at Guatemala City. Also felt (II) at San Salvador, El Salvador.	

DATE	ORIGIN TIME			GEOGRAPHIC COORDINATES		DEPTH	MAGNITUDES		SD	NO. STA USED	REGION, CONTRIBUTED	MAGNITUDES AND COMMENTS
	HR	MN	SEC	LAT	LONG		GS	Msz				
SEP 28	20	26	56.1	5.814 S	150.959 E	28 G	5.8	6.6	1.1	370	NEW BRITAIN REGION, P.N.G.	Ms 7.1 (BRK). Mo=9.8*10**18 Nm (GS). Mo=8.2*10**18 Nm (HRV). Mo=1.3*10**19 Nm (PPT). Two events about 2.3 seconds apart.
SEP 30	00	21	46.4	20.878 S	178.591 W	566 G	6.3		1.0	452	FIJI ISLANDS REGION.	mb 6.5 (BRK). Mo=2.3*10**19 Nm (GS). Mo=3.1*10**19 Nm (HRV). Mo=3.0*10**19 Nm (PPT).
OCT 14	15	58	12.7	9.094 S	158.442 E	23 D	6.3	7.1	1.3	377	SOLOMON ISLANDS.	Ms 7.0 (BRK). Mo=6.4*10**19 Nm (GS). Mo=7.8*10**19 Nm (HRV). Mo=8.0*10**19 Nm (PPT). Two events about 10 seconds apart. Felt strongly throughout the Solomon Islands.
OCT 19	21	23	14.3	30.780 N	78.774 E	10 D	6.5	7.0	1.2	525	NORTHERN INDIA.	Ms 7.0 (BRK). Mo=1.8*10**19 Nm (GS). Mo=1.8*10**19 Nm (HRV). Mo=6.0*10**18 Nm (PPT). Two events about 1.6 seconds apart. At least 2,000 people killed, more than 1,800 injured and 18,000 buildings destroyed in the Chamoli-Uttarkashi area. Some damage occurred at Chandigarh and New Delhi. Felt in northern India, western Nepal and northeastern Pakistan. Landslides occurred in the epicentral area. A 30-meter deep crack was noted in the Uttarkashi area.
OCT 28	01	09	10.8	33.827 N	131.222 E	17 D	5.1	4.9	1.1	115	KYUSHU, JAPAN.	Mo=7.5*10**16 Nm (HRV). One person slightly injured in Yamaguchi Prefecture, Honshu. Felt (IV JMA) at Fukuoka, Kyushu and (III JMA) in southwestern Honshu. Also felt on Shikoku. Felt (III) at Iwakuni, Honshu.
NOV 01	16	23	22.3	30.255 S	177.981 W	21 G	6.4	6.5	1.1	484	KERMADEC ISLANDS, NEW ZEALAND.	Ms 6.7 (BRK). Mo=9.5*10**18 Nm (GS). Mo=9.4*10**18 Nm (HRV). Mo=1.0*10**19 Nm (PPT). Two events about 5 seconds apart. Felt on Raoul Island.
NOV 04	01	50	31.6	30.666 N	50.218 E	39	5.4	5.4	1.2	298	NORTHERN IRAN.	Mo=3.1*10**17 Nm (HRV). Fifty-one people injured and 290 houses destroyed or damaged in the Behbahan area.
NOV 10	15	19	14.2	30.585 N	50.268 E	44	5.0	4.4	1.1	195	NORTHERN IRAN.	Fifteen people injured and damage in the Behbahan area. Also damage at Deh Dasht.
NOV 13	11	12	13.2	8.361 N	126.371 E	36 G	6.1	6.4	1.2	399	MINDANAO, PHILIPPINE ISLANDS.	Ms 6.5 (BRK). Mo=1.6*10**19 Nm (GS). Mo=1.0*10**19 Nm (HRV). Mo=1.0*10**19 Nm (PPT). Some damage (VI RF) was reported in the Bislig-Butuan-Surigao area. Felt (IV RF) at Cagayan de Oro, (III RF) on Camiguin and (II RF) on Cebu.
NOV 19	22	28	51.0	4.554 N	77.442 W	21 D	6.4	7.0	1.2	447	NEAR WEST COAST OF COLOMBIA.	MD 6.8 (UVC). Ms 6.4 (BRK). Mo=5.0*10**19 Nm (GS). Mo=7.3*10**19 Nm (HRV). Mo=5.0*10**19 Nm (PPT). Complex event. Two people killed and 28 houses damaged in Choco Department. Minor damage (VI) to buildings in the Buenaventura and Cali areas. Felt strongly in many parts of western Colombia. Felt (II) at Quito and Guayaquil, Ecuador.
NOV 22	00	40	23.9	13.887 N	44.068 E	10 G	4.7		1.1	40	WESTERN ARABIAN PENINSULA.	Ten people killed, 39 injured, 17 houses destroyed and 87 damaged in western Yemen.
NOV 28	17	19	55.5	36.924 N	49.603 E	16 D	5.6	5.0	1.0	349	WESTERN IRAN.	Mo=3.2*10**17 Nm (HRV). At least one person killed, 70 injured and damage in the Rudbar area. Landslides occurred on the road between Rudbar and Rasht. Felt in other parts of northern Iran and at Tehran.
DEC 02	08	49	40.2	45.498 N	21.115 E	9	5.2	5.6	1.1	281	ROMANIA.	ML 5.5 (LJU), 5.1 (WAR), 4.9 (TIR). MD 5.5 (VIE), 5.4 (TTG). Mo=1.9*10**17 Nm (HRV). Mo=2.0*10**17 Nm (PPT). Some people injured, about 4,500 people homeless and more than 5,000 buildings damaged (VIII) in the Voiteg area. Slight damage in the Belgrade area, Yugoslavia. Felt along much of the Romania-Yugoslavia border. Also felt in southern Hungary.
DEC 11	20	39	39.2	23.368 S	171.044 E	37 D	5.8	6.5	1.4	418	LOYALTY ISLANDS REGION.	MS 6.3 (BRK). Mo=6.4*10**18 Nm (HRV). Mo=4.0*10**18 Nm (PPT).
DEC 13	02	33	51.8	45.578 N	151.560 E	30 G	6.1	6.6	1.1	509	KURIL ISLANDS.	Ms 6.2 (BRK). Mo=8.1*10**18 Nm (HRV). Mo=1.3*10**19 Nm (PPT).

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	UTC	HR	MN	SEC	LAT		LONG	GS	MB			
APR 06	13	54	40.2	50.724	N 130.092	W 20	G	6.0	6.8	1.0	322	VANCOUVER ISLAND REGION. Mo=1.2*10**19 Nm (GS). Mo=1.2*10**19 Nm (HRV). Mo=3.2*10**19 Nm (PPT). Felt at Port Hardy and Port McNeill, British Columbia.
APR 13	01	20	00.8	51.153	N 5.798	E 21	D	5.5	5.2	1.2	404	THE NETHERLANDS. ML 5.9 (BNS), 5.9 (UCC), 5.8 (STR), 5.8 (BGS), 5.5 (LDG). MD 5.8 (VIE). Mo=1.3*10**17 Nm (HRV). One person died of a heart attack at Bonn, Germany. Twenty people injured and some buildings damaged (VIII) at Roermond, Netherlands and 25 people injured and some buildings damaged (VII) at Heinsberg, Germany. Damaged also reported at Bonn and Koin, Germany and in Limburg Province, Belgium. Felt strongly in many parts of northwestern Germany, eastern Belgium and southern Netherlands. Felt in northeastern France. Also felt throughout much of southeastern England and in the Liverpool-Manchester area, United Kingdom.
APR 23	04	50	23.2	33.961	N 116.318	W 12		5.7	6.3		392	SOUTHERN CALIFORNIA. <PAS-P>. ML 6.1 (PAS). Mo=2.4*10**18 Nm (GS). Mo=2.1*10**18 Nm (HRV). Mo=5.0*10**18 Nm (PPT). Thirty-two people were treated for minor injuries. Light to moderate damage (VII) at Joshua Tree and (VI) at Angelus Oaks, Banning, Cathedral City, Coachella, Desert Hot Springs, Indio, Palm Desert, Palm Springs, Pioneertown, Rancho Mirage, Twentynine Palms and Yucca Valley. Felt strongly in many parts of southern California. Felt from San Diego, California to Las Vegas, Nevada and from Santa Barbara, California to Yuma, Arizona. Also felt at Phoenix, Arizona and in Baja California, Mexico.
APR 23	15	32	49.1	22.418	N 98.852	E 10	D	5.9	6.3	1.1	406	MYANMAR-CHINA BORDER REGION. Mo=1.9*10**18 Nm (HRV). Mo=4.0*10**18 Nm (PPT). One child injured and slight damage in Yunnan Province, China. Felt in northern Thailand and by people in tall buildings in Bangkok, Thailand. Also felt in Myanmar.
APR 25	18	06	04.2	40.368	N 124.316	W 15		6.3	7.1		735	NEAR COAST OF NORTHERN CALIFORNIA. <GM-P>. Mo=5.1*10**19 Nm (GS). Mo=6.7*10**19 Nm (HRV). Mo=4.0*10**19 Nm (PPT). Ninety-eight people injured and considerable damage in southwestern Humboldt County. Preliminary estimate of damage in this area from the series of earthquakes is 66 million U.S. dollars. Maximum intensities (VIII) at Ferndale, Honeydew, Petrolia, Rio Dell and Scotia; (VII) at Fortuna and Loleta; (VI) at Eureka. Landslides and rockfalls occurred in the Honeydew-Petrolia area. Liquefaction was noted in areas of the Eel and Mattole River Valleys. Felt throughout much of northern California as far south as San Francisco and southeast to Carson City and Reno, Nevada. Also felt in many areas of southern Oregon. Strong-motion records indicate peak horizontal accelerations of 1.3g at Cape Mendocino and 0.69g at Petrolia. A tsunami was generated with maximum wave heights (peak-to-trough) of 1.1 m. at Crescent City, 0.2 m. at Arena Cove and 0.17 m. at Pt. Reyes, California; 0.2 m. at Port Orford, Oregon; 0.15 m. at Kahului and 0.1 m. at Hilo, Hawaii.
APR 26	07	41	39.7	40.415	N 124.603	W 20		5.9	6.6		644	NEAR COAST OF NORTHERN CALIFORNIA. <GM-P>. Mo=6.0*10**18 Nm (HRV). Mo=2.0*10**19 Nm (PPT). This earthquake caused additional damage in the Ferndale, Fortuna and Petrolia areas. A fire caused by a broken gas main destroyed much of the business district of Scotia. Felt throughout much of northern California.
APR 26	11	18	25.7	40.378	N 124.575	W 22		6.5	6.6		757	NEAR COAST OF NORTHERN CALIFORNIA. <GM-P>. Mo=1.2*10**19 Nm (GS). Mo=1.0*10**19 Nm (HRV). Mo=3.2*10**19 Nm (PPT). This earthquake caused additional damage in the Ferndale and Petrolia areas. Felt throughout much of northern California, south as far as Salinas, Santa Cruz and San Francisco. Also felt in southern Oregon.
MAY 12	18	05	42.6	16.524	S 172.367	W 15	G	6.4	6.8	1.1	583	SAMOA ISLANDS REGION. Ms 7.0 (BRK). Mo=9.5*10**18 Nm (GS). Mo=1.2*10**19 Nm (HRV). Mo=2.0*10**19 Nm (PPT). Felt in American Samoa and Western Samoa.
MAY 15	07	05	05.3	6.075	S 147.572	E 58	G	6.2		1.1	420	EASTERN NEW GUINEA REGION, PAPUA NEW GUINEA. Ms 7.1 (BRK). Mo=7.7*10**19 Nm (GS). Mo=8.1*10**19 Nm (HRV). Mo=6.3*10**19 Nm (PPT). Slight damage at Lae.
MAY 15	08	08	02.9	41.019	N 72.429	E 50	*	5.7	6.2	1.0	406	KYRGYZSTAN. Three people killed, 5,500 houses completely destroyed and more than 4,000 houses damaged (VII) in the Osh area. Felt (VI) at Andizhan, (V) at Fergana, (IV) at Namangan and (III) at Tashkent, Uzbekistan. Also felt (III) at Dzhambul and (II) at Chimkent and Alma-Ata, Kazakhstan. Landslides reported at Karasu and Uzgen.
MAY 17	09	49	19.1	7.239	N 126.645	E 33	G	6.2	7.1	1.2	533	MINDANAO, PHILIPPINE ISLANDS. Ms 7.0 (BRK). Mo=4.4*10**19 Nm (GS). Mo=4.9*10**19 Nm (HRV). Mo=7.9*10**19 Nm (PPT). Felt (V RF) at Bislig, (IV RF) at Cagayan de Oro, (III RF) at Palo and (II RF) at Mactan.
MAY 17	10	15	31.3	7.191	N 126.762	E 33	N	6.4	7.5	1.1	480	MINDANAO, PHILIPPINE ISLANDS. Ms 7.5 (BRK). Mo=9.9*10**19 Nm (GS). Mo=8.3*10**19 Nm (HRV). Mo=1.3*10**20 Nm (PPT). Some minor damage at Tandag and Bislig. Felt (V RF) at Cagayan de Oro, (III RF) at Palo and (II RF) at Mactan. Small tsunami generated.

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DATE	ORIGIN TIME UTC HR MN SEC	GEOGRAPHIC COORDINATES LAT LONG	DEPTH	MAGNITUDES GS MB Msz	SD	NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
MAY 19	01 26 44.6	13.842 N 44.030 E	10 G	4.5	0.8	43	WESTERN ARABIAN PENINSULA. Several people injured and at least 20 houses destroyed in the Sanaa Mountain area, Yemen.
MAY 20	12 20 32.8	33.377 N 71.317 E	16 G	6.0 6.0	1.1	432	PAKISTAN. Mo=2.7*10**18 Nm (GS). Mo=1.4*10**18 Nm (HRV). At least 36 people killed and 100 injured in the Peshawar and Kohat Districts, including 20 people killed at Shakkar Khel. At least 400 houses destroyed in the Kohat District. Felt at Islamabad and Lahore. Also felt in the Srinagar area, Kashmir and in parts of northern India.
MAY 21	04 59 57.5	41.604 N 88.813 E	0 G	6.5 5.0	0.8	585	SOUTHERN XINJIANG, CHINA. Probable underground nuclear explosion.
MAY 25	16 55 04.1	19.613 N 77.872 W	23 G	6.3 6.9	0.9	492	CUBA REGION. Ms 7.0 (BRK). Mo=2.0*10**19 Nm (HRV). Mo=5.0*10**19 Nm (PPT). Forty people injured and more than 820 buildings damaged in the Pilon-Manzanillo area. Felt at Guantanamo and in most of eastern Cuba as far away as Sancti Spiritus. Also felt on Jamaica.
MAY 27	05 13 38.8	11.122 S 165.239 E	19 G	6.3 7.0	0.9	456	SANTA CRUZ ISLANDS. Ms 7.3 (BRK). Mo=3.4*10**19 Nm (GS). Mo=3.9*10**19 Nm (HRV). Mo=1.0*10**20 Nm (PPT). Felt strongly at Lata Station, Santa Cruz. A small tsunami was observed.
JUN 25	06 30 51.0	28.314 S 176.716 W	20 G	6.1 6.5	1.2	398	KERMADEC ISLANDS REGION. Mo=6.5*10**18 Nm (GS). Mo=6.5*10**18 Nm (HRV). Mo=1.3*10**19 Nm (PPT). Felt (IV) on Raoul Island.
JUN 28	11 57 34.1	34.201 N 116.436 W	1	6.2 7.6		523	SOUTHERN CALIFORNIA. <PAS-P>. Mo=6.7*10**19 Nm (GS). Mo=1.1*10**20 Nm (HRV). Mo=2.0*10**20 Nm (PPT). One person was killed at Yucca Valley, two people died of heart attacks, more than 400 people were injured and substantial damage occurred in the Landers-Yucca Valley area. Maximum intensity IX. Preliminary estimate of damage for this earthquake plus the following magnitude 6.7 event at 1505 UTC is 92 million U.S. dollars. Felt throughout southern California, southern Nevada, western Arizona and southern Utah. Felt in high-rise buildings as far north as Boise, Idaho and as far east as Albuquerque, New Mexico and Denver, Colorado. Surface faulting observed along a 70-kilometer segment from Joshua Tree to near Barstow with as much as 5.5 meters of horizontal displacement and as much as 1.8 meters of vertical displacement. Seiches were reported as far north as Lake Union, Washington and as far east as Aurora, Colorado and Corpus Christi, Texas.
JUN 28	15 05 30.7	34.203 N 116.827 W	5 G	6.3 6.7		464	SOUTHERN CALIFORNIA. <PAS-P>. Mo=6.8*10**18 Nm (HRV). Mo=2.0*10**19 Nm (PPT). Some people injured, substantial damage and landslides in the Big Bear Lake and Big Bear City areas. Maximum intensity VIII. Felt throughout much of southern California and in parts of southern Nevada and western Arizona.
JUL 09	01 43 57.6	34.239 N 116.837 W	0	5.6 5.2		272	SOUTHERN CALIFORNIA. <PAS-P>. MD 5.3 (PAS). ML 5.7 (BRK). Mo=1.1*10**17 Nm (HRV). At least 16 people injured in the Big Bear Lake area. Slight damage (VI) at Angelus Oaks, Big Bear City, Rimforest and Sugarloaf. Felt (V) at Crest Park, Forest Falls, Highland, La Quinta, Moreno Valley, Palm Springs, Placentia, Ramona, Santa Ana, Skyforest, Twin Peaks and Victorville. Felt in Los Angeles, Orange, Riverside, San Bernardino and San Diego Counties. Rockfalls and landslides occurred in the Big Bear Lake area.
JUL 10	09 31 27.5	44.695 N 149.482 E	20 G	6.2 6.5	1.0	575	KURIL ISLANDS. Ms 6.1 (BRK). Mo=6.6*10**18 Nm (GS). Mo=7.4*10**18 Nm (HRV). Mo=1.3*10**19 Nm (PPT).
JUL 18	08 36 58.7	39.419 N 143.330 E	29 G	6.2 6.9	1.0	506	OFF EAST COAST OF HONSHU, JAPAN. Ms 7.0 (BRK). Mo=2.3*10**19 Nm (GS). Mo=2.7*10**19 Nm (HRV). Mo=2.5*10**19 Nm (PPT). Felt (III JMA) at Aomori, Hachinohe, Ishinomaki, Miyako, Sakata and Sendai; (II JMA) at Akita and Fukushima; (I JMA) at Kofu, Tokyo, Tateyama and Utsunomiya, Honshu. Also felt (II JMA) at Kushiro, Nemuro and Obihiro, Hokkaido. Tsunami generated with maximum wave heights (peak-to-trough) of 46 cm. at Ofunato. 42 cm. at Miyako, 28 cm. at Aikawa and 24 cm. at Hachinohe.
JUL 20	07 46 46.7	78.562 N 5.523 E	10 G	5.7 6.3	1.5	249	SVALBARD REGION. Ms 6.5 (BRK). Mo=1.0*10**19 Nm (GS). Mo=1.3*10**19 Nm (HRV). Mo=2.5*10**19 Nm (PPT).
AUG 02	05 50 11.6	0.883 S 127.582 E	19 G	5.8 6.1	1.1	288	HALMAHERA, INDONESIA. Ms 6.6 (BRK). Mo=3.1*10**18 Nm (GS). Mo=2.6*10**18 Nm (HRV). Mo=1.3*10**19 Nm (PPT).
AUG 07	18 19 20.4	57.589 N 142.846 W	14 G	6.3 6.6	1.0	579	GULF OF ALASKA. ML 6.4 (AEIC). Ms 6.7 (BRK). Mo=2.2*10**19 Nm (GS). Mo=1.8*10**19 Nm (HRV). Mo=5.0*10**19 Nm (PPT). Felt strongly at Yakutat. Felt (V) at Fort Richardson; (IV) at Cooper Landing, Pelican and Whittier; (III) at Chitina, Chugiak, Cordova, Elfin Cove, Juneau, Karluk, Larsen Bay, Moose Pass, Petersburg, Skagway and Skwentna; (II) at Anchorage. Felt throughout much of southern and southeastern Alaska. Also felt at Carcross and Whitehorse, Yukon Territory, Canada and at Pleasant Camp, British Columbia, Canada.

DATE	ORIGIN TIME			GEOGRAPHIC COORDINATES		DEPTH	MAGNITUDES SD			NO. STA USED	REGION, CONTRIBUTED	MAGNITUDES AND COMMENTS		
	UTC	HR	MN	SEC	LAT		LONG	GS	MB				MsZ	
AUG 19	02	04	37.4	42.142	N	73.575	E	27	G	6.6	7.4	1.1	636	KYRGYZSTAN. Ms 7.5 (BRK). Mo=9.1*10**19 Nm (GS). Mo=7.7*10**19 Nm (HRV). Mo=5.0*10**19 Nm (PPT). An estimated 75 people killed, including 14 killed by landslides in Toluk. Several villages, including Toluk, were destroyed (IX) in the Susamyrtau Mountains and at least 8,200 dwellings were destroyed. Felt (VII) at Andizhan, Chimion and Namangan, Uzbekistan. Structural damage (VI) occurred to buildings at Bishkek, Kyrgyzstan. Felt (VI) at Angren, Fergana and Tashkent, Uzbekistan and at Osh, Kyrgyzstan. Also felt (VI) at Alma-Ata, Kazakhstan; (V) at Samarkand and Yangiyul, Uzbekistan and Khodzhent, Tajikistan; (IV) at Dushanbe, Kulyab, Nurek and Pendzhikent, Tajikistan and Naryn, Kyrgyzstan; (III) at Cholpon-Ata and Przhevalsk, Kyrgyzstan. Elevation changes of up to 4 meters observed in the Susamyrtau Valley. Liquefaction occurred in the epicentral area.
AUG 19	03	20	27.9	42.104	N	73.237	E	19	D	6.1	6.6	1.1	377	KYRGYZSTAN.
AUG 28	00	50	50.4	29.087	N	66.740	E	9	D	5.5	5.5	1.3	299	PAKISTAN. Mo=2.6*10**17 Nm (HRV). At least four people killed, several injured and many houses destroyed in the Kalat area. Felt at Khuzdar, Manguchar, Mastung and Quetta.
AUG 28	18	18	46.4	0.965	S	13.562	W	16	G	6.3	7.0	1.0	578	NORTH OF ASCENSION ISLAND. Ms 7.1 (BRK). Mo=2.3*10**19 Nm (GS). Mo=2.0*10**19 Nm (HRV). Mo=5.0*10**19 Nm (PPT).
SEP 02	00	16	01.6	11.742	N	87.340	W	45	G	5.3	7.2	1.3	212	NEAR COAST OF NICARAGUA. Ms 7.4 (BRK). Mo=3.4*10**20 Nm (HRV). Mo=3.2*10**20 Nm (PPT). At least 116 people killed, more than 68 missing and over 13,500 left homeless in Nicaragua. At least 1,300 houses and 185 fishing boats were destroyed along the west coast of Nicaragua. Total damage in Nicaragua is estimated at between 20 and 30 million U.S. dollars. Some damage was also reported in Costa Rica. Most of the casualties and damage were caused by a tsunami affecting the west coasts of Nicaragua and Costa Rica, reaching heights of up to 8 meters. The tsunami ran inland 1,000 meters at Masachapa, Nicaragua. Maximum wave heights (in cm. peak-to-trough) at selected tide stations were as follows: 111 at Baltra Island, 83 at Easter Island, 28 at Socorro Island, 18 at La Libertad, Ecuador, 10 at Valparaiso, Chile and 10 at Hilo, Hawaii. Felt in Chinandega and Leon Departments, Nicaragua. Also felt at Crucero, Managua and San Marcos, Nicaragua and at San Jose, Costa Rica.
SEP 08	00	38	15.4	29.134	N	52.187	E	18	D	5.2	4.7	1.0	276	SOUTHERN IRAN. One person killed and 11 injured in the Firuzabad area. Also 200 houses and 3 bridges were destroyed and landslides blocked roads in the epicentral area. Damage reported at Bonu, Darenjan, Giah Zar and Meygoli. Felt at Kazerun and Shiraz.
SEP 11	03	57	26.5	6.087	S	26.651	E	11	G	6.7	6.5	1.0	642	ZAIRE. Ms 7.0 (BRK). Mo=4.9*10**18 Nm (GS). Mo=3.7*10**18 Nm (HRV). Mo=3.2*10**18 Nm (PPT). Eight people killed, 37 injured and several buildings destroyed at Kabalo. Felt at Bujumbura, Burundi.
SEP 26	22	15	57.5	1.289	N	129.118	E	28	D	5.9	6.5	1.2	270	HALMAHERA, INDONESIA. Mo=1.2*10**19 Nm (GS). Mo=8.2*10**18 Nm (HRV). Mo=3.2*10**19 Nm (PPT).
SEP 30	05	34	00.3	51.281	N	178.037	W	33	N	6.1	6.6	1.0	592	ANDREANOF ISLANDS, ALEUTIAN IS. ML 5.8 (PMR). Ms 6.8 (BRK). Mo=9.5*10**18 Nm (GS). Mo=9.5*10**18 Nm (HRV). Mo=2.0*10**19 Nm (PPT). Felt (V) on Adak and (II) on Amchitka.
OCT 11	19	24	26.2	19.247	S	168.948	E	129	G	6.4	6.8	1.1	605	VANUATU ISLANDS. Ms 7.2 (BRK). Mo=5.3*10**19 Nm (GS). Mo=1.5*10**20 Nm (HRV). Mo=4.0*10**20 Nm (PPT). Felt (VIII) on Erromango and Tanna; (VI) at Port Vila.
OCT 12	13	09	55.5	29.778	N	31.144	E	22	G	5.9	5.3	1.2	527	EGYPT. MD 5.3 (HLW). Mo=5.0*10**17 Nm (GS). Mo=5.6*10**17 Nm (HRV). At least 552 people killed, more than 9,929 injured and 8,300 buildings damaged or destroyed in the Cairo area. Preliminary estimates of damage about 300 million U.S. dollars. Felt in much of Egypt from Alexandria to Aswan and in Israel from Elat to Tel Aviv and Jerusalem.
OCT 15	22	37	05.9	14.537	S	166.711	E	25	D	6.2	6.7	1.4	524	VANUATU ISLANDS. Ms 7.1 (BRK). Mo=1.6*10**19 Nm (GS). Mo=2.0*10**19 Nm (HRV). Mo=3.2*10**19 Nm (PPT).
OCT 17	02	51	50.9	19.226	S	169.553	E	12	G	5.8	6.3	1.3	334	VANUATU ISLANDS. Ms 7.0 (BRK). Mo=2.4*10**18 Nm (GS). Mo=5.8*10**18 Nm (HRV). Mo=7.9*10**18 Nm (PPT).
OCT 17	08	32	40.5	6.845	N	76.806	W	14	G	6.2	6.7	1.0	494	NORTHERN COLOMBIA. Ms 7.0 (BRK). Mo=7.7*10**18 Nm (GS). Mo=1.1*10**19 Nm (HRV). Mo=1.6*10**19 Nm (PPT). About 20 people injured and 90 percent of the buildings destroyed at Murindo. Felt throughout northwestern Colombia from Cali and Bogota to Cesar Department.

DATE	ORIGIN TIME			GEOGRAPHIC COORDINATES		DEPTH	MAGNITUDES SD			NO. STA USED	REGION, CONTRIBUTED	MAGNITUDES	AND COMMENTS	
	UTC	HR	MN	SEC	LAT		LONG	GS	MB					Msz
OCT 18	15	11	59.1	7.075	N	76.862	W	10	G	6.6	7.3	1.3	544	NORTHERN COLOMBIA. Ms 7.4 (BRK). Mo=8.4*10**19 Nm (GS). Mo=5.7*10**19 Nm (HRV). Mo=1.6*10**20 Nm (PPT). One person killed, 50 injured and damage in the Murindo-Apartado-Medellin area. At least 10 people killed, 65 injured and 1,500 homeless by the explosion of a mud volcano in the San Pedro de Uraba area. Slight damage at Bogota. Felt in much of northwestern Colombia and as far south as Cali. Felt strongly in Darien Province, Panama. Also felt (IV) on the Azuero Peninsula and at Panama City, Panama. Felt at Caracas and Valencia, Venezuela. Also felt on Aruba. Landslides occurred in the epicentral area. Liquefaction was observed in the Murindo area and as far north as Apartado. A small island emerged from the Caribbean Sea off San Juan de Uraba.
OCT 22	09	04	23.4	30.227	S	177.205	W	26	G	6.0	6.6	1.2	268	KERMADEC ISLANDS, NEW ZEALAND. Ms 7.2 (BRK). Mo=6.2*10**18 Nm (GS). Mo=7.8*10**18 Nm (HRV). Mo=1.3*10**19 Nm (PPT). Felt (IV) on Raoul Island.
OCT 22	17	39	00.6	29.755	N	31.535	E	10	G	4.5		0.8	31	EGYPT. MD 4.2 (HLW), 4.1 (RYD). Four people killed and at least 50 injured in the Cairo area.
OCT 22	23	08	27.1	30.125	S	177.000	W	16	G	5.7	6.4	1.1	254	KERMADEC ISLANDS, NEW ZEALAND. Ms 6.5 (BRK). Mo=6.5*10**18 Nm (GS). Mo=5.0*10**18 Nm (HRV). Mo=7.9*10**18 Nm (PPT).
OCT 23	09	11	09.0	31.355	N	4.318	W	29	D	5.3	5.2	1.1	316	MOROCCO. MD 5.2 (RBA). mbLg 5.0 (MDD). Mo=2.4*10**17 Nm (HRV). At least two people killed at Rissani. Felt (VI) at Rissani and (V) at Erfoud. Felt throughout much of Morocco from Fes to Marrakech.
OCT 23	13	04	40.7	5.352	S	152.616	E	31	D	5.8	6.5	1.0	287	NEW BRITAIN REGION, PAPUA NEW GUINEA. Ms 7.0 (BRK). Mo=5.1*10**18 Nm (HRV). Mo=1.6*10**19 Nm (PPT). Felt (IV) at Rabaul.
OCT 23	23	19	45.2	42.589	N	45.104	E	16	G	6.1	6.5	1.0	591	EASTERN CAUCASUS. Ms 6.8 (BRK). Mo=4.1*10**18 Nm (GS). Mo=4.9*10**18 Nm (HRV). Mo=7.3*10**18 Nm (OBN). At least one person killed, 10 injured and several houses damaged (VIII) in the Barisakho-Kazbegi area, Georgia. Landslides reported in the epicentral area. Felt (VI) at Tskhinvali and Bakuriani; (V) at Tbilisi and Kutaisi, Georgia. Felt (V) at Grozny and Vladikavkaz; (IV) at Sochi and Pyatigorsk, Russia. Also felt (IV) at Akstafa and Kazakh; (III) at Taz and Tsey, Azerbaijan.
OCT 24	08	23	01.1	29.536	S	177.279	W	19	G	5.8	6.2	1.2	281	KERMADEC ISLANDS, NEW ZEALAND. Ms 6.6 (BRK). Mo=5.4*10**18 Nm (GS). Mo=8.7*10**18 Nm (HRV). Mo=1.3*10**19 Nm (PPT). Felt (IV) on Raoul Island.
NOV 02	15	13	25.8	46.727	N	8.328	E	0	G	4.2		1.2	108	SWITZERLAND. ML 4.0 (GRF), 3.8 (LDG), 3.5 (STR), 3.4 (ROM). MD 3.7 (VIE), 3.4 (LJU). Six people killed by the accidental explosion of an ammunitions cavern.
NOV 08	03	43	20.4	15.727	S	179.703	W	10		5.7	6.5	1.3	340	FIJI ISLANDS REGION. Ms 6.6 (BRK). Mo=8.3*10**18 Nm (GS). Mo=1.2*10**19 Nm (HRV). Felt in eastern Vanua Levu and on Taveuni.
NOV 21	22	39	32.9	56.665	S	26.405	W	20	G	5.9	6.6	1.1	235	SOUTH SANDWICH ISLANDS REGION. Mo=6.6*10**18 Nm (GS). Mo=7.9*10**18 Nm (HRV).
NOV 28	03	13	33.3	31.330	S	71.992	W	12	G	5.8	6.5	1.0	337	NEAR COAST OF CENTRAL CHILE. Mo=6.5*10**18 Nm (GS). Mo=5.6*10**18 Nm (HRV). Felt (V) at La Ligua, Los Andes, San Felipe, La Serena, Llaillay, Valparaiso and San Antonio; (III) at Santiago and Rancagua; (II) at Copiapo. Felt (IV) at Mendoza, Argentina.
DEC 09	20	29	47.1	40.058	N	45.312	E	16	D	4.8	4.5	1.2	110	EASTERN CAUCASUS. Some houses destroyed (VII) in the Taratumb area; also damage at Karmrashen, Armenia. A landslide blocked 500 meters of highway in the epicentral area, Armenia. Felt (V) at Kelbadzhar, Yerevan and Abovyan, Armenia. Also felt in northwestern Iran.
DEC 12	05	29	26.3	8.480	S	121.896	E	28	G	6.5	7.5	1.4	457	FLORES REGION, INDONESIA. Ms 7.5 (BRK). Mo=1.4*10**20 Nm (GS). Mo=5.1*10**20 Nm (HRV). Mo=8.0*10**20 Nm (PPT). At least 2,500 people killed or missing in the Flores region, including 1,490 at Maumere and 700 on Babi. More than 500 people were injured and 90,000 were left homeless. Nineteen people killed and 130 houses destroyed on Kalaotoa. Severe damage, with approximately 90 percent of the buildings destroyed at Maumere by the earthquake and tsunami; 50 to 80 percent of the structures on Flores were damaged or destroyed. Damage also occurred on Sumba and Alor. The tsunami on Flores ran inland as much as 300 meters with wave heights of 25 meters. Landslides and ground cracks were reported at several locations on the island. Felt (V) at Larantuka, Flores; (IV) at Waingapu, Sumba and Ujung Pandang, Sulawesi; (II) at Kupang, Timor.
DEC 18	11	21	44.7	26.357	N	100.872	E	30	*	5.0	4.7	1.4	83	YUNNAN, CHINA. One person killed, 45 injured and several houses damaged in Yongsheng County.
DEC 20	20	52	47.2	6.582	S	130.393	E	78	G	6.6	7.0	1.2	602	BANDA SEA. Ms 7.0 (BRK). Mo=5.0*10**19 Nm (GS). Mo=8.5*10**19 Nm (HRV). Mo=1.3*10**20 Nm (PPT). Felt in parts of northern Australia.

1992

DATE	ORIGIN TIME UTC HR MN SEC	GEOGRAPHIC COORDINATES LAT LONG	DEPTH	MAGNITUDES SD GS MB Msz	NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
----- OTHER NOTABLE NORTH AMERICAN EARTHQUAKES IN 1992 -----						
JUN 29	10 14 22.2	36.705 N 116.293 W	9	5.6 5.4	0.9 262	CALIFORNIA-NEVADA BORDER REGION. Mo=4.8*10**17 Nm (HRV). Mo=2.5*10**17 Nm (PPT). Department of Energy buildings at the Nevada Test Site sustained considerable damage. Minor damage occurred at Beatty, Amargosa Valley and Mercury, Nevada. Felt at Las Vegas, Nevada.
JUL 05	21 18 27.1	34.583 N 116.319 W	0	5.3 5.2	218	SOUTHERN CALIFORNIA. <PAS-P>. ML 5.4 (PAS). Slight damage (VI) at Big Bear City. Felt (V) at Covina, Joshua Tree, La Quinta, Morongo Valley, Newberry Springs, Palm Springs, Placentia, San Clemente, Tehachapi and Temecula. Felt in Imperial, Kern, Los Angeles, Orange, Riverside, San Bernardino and San Diego Counties. Also felt in parts of western Arizona.
SEP 02	10 26 20.9	37.090 N 113.472 W	15	5.7 5.6	342	UTAH. <SLC-P>. ML 5.9 (SLC). Mo=3.3*10**17 Nm (HRV). Some damage (VI) at Cedar City, Hurricane, Kanab, New Harmony, Santa Clara, Springdale, St. George, Toquerville, Virgin and Washington. The earthquake triggered a large landslide which destroyed three houses at Springdale. Felt (V) at Glendale, Gunlock, Hatch, Kanarraville, La Verkin, Orderville, Panguitch and Rockville; (IV) at Alton, Beaver, Beryl, Brian Head, Bryce, Circleville, Enterprise, Escalante, Junction, Milford, Minersville, Modena, Mt. Carmel, Newcastle, Parowan, Richfield and Tropic. Felt (V) at Fredonia and Grand Canyon, Arizona. Felt (IV) at Bunkerville, Caliente, Logandale, Panaca and Pioche, Nevada. Also felt (IV) at Littlefield, Arizona. Felt throughout much of southwestern Utah, northwestern Arizona and southeastern Nevada as far north as Richfield, Utah and as far south as Flagstaff, Arizona. Felt west as far as Caliente and Pioche, Nevada and southwest to the Las Vegas, Nevada area.
NOV 27	16 00 57.4	34.340 N 116.900 W	2	5.1 4.8	151	SOUTHERN CALIFORNIA. <PAS-P>. ML 5.3 (PAS), 5.6 (BRK). Mo=4.3*10**17 Nm (BRK). Slight damage (VI) at Big Bear City. Felt (V) at Apple Valley, Blue Jay, Fawnskin, Fontana, Gardena, Hesperia, Indio, Lake Elsinore, La Quinta, Loma Linda, Oro Grande, Pioneertown, San Bernardino, South Pasadena and Yucaipa. Felt in Kern, Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura Counties. Felt as far as Nellis Air Force Base, Nevada.

1993

JAN 06	22 51 44.6	28.997 N 52.137 E	24 D	5.4 5.3	1.0 364	SOUTHERN IRAN. Mw 5.4 (HRV). Mo=1.5*10**17 Nm (HRV). Severe damage in the Firuzabad-Dadengan area.
JAN 08	06 57 51.8	28.028 S 26.800 E	5 G		0.5 7	REPUBLIC OF SOUTH AFRICA. ML 2.7 (PRE). Six people killed and 7 injured in a mine near Welkom.
JAN 10	14 39 00.3	59.274 S 26.205 W	61 G	6.3	1.0 284	SOUTH SANDWICH ISLANDS REGION. Mw 6.7 (GS), 6.7 (HRV). Mo=1.2*10**19 Nm (GS). Mo=1.3*10**19 Nm (HRV). Mo=1.6*10**19 Nm (PPT).
JAN 13	17 11 07.5	17.955 N 76.583 W	16 D	5.5 4.8	1.1 337	JAMAICA REGION. Mw 5.5 (HRV). MD 5.7 (UPA), 5.4 (HOJ). Mo=2.0*10**17 Nm (HRV). One person killed and some damage (VII) in the Kingston area. Felt strongly throughout much of Jamaica.
JAN 15	11 06 05.9	43.300 N 143.691 E	102 G	6.9 7.1	1.5 203	HOKKAIDO, JAPAN REGION. Mw 7.5 (GS), 7.6 (HRV). Ms 6.7 (BRK). Mo=2.2*10**20 Nm (GS). Mo=2.7*10**20 Nm (HRV). Mo=5.5*10**20 Nm (PPT). Two people killed, 614 injured and substantial damage (VI JMA) at Kushiro, Hokkaido and Hachinohe, Honshu. Felt (V JMA) at Hiroo, Nemuro, Obihiro, Otaru and Urakawa; (IV JMA) at Hakodate and Tomakomai; (III JMA) at Sapporo, Hokkaido. Felt (IV JMA) at Aomori and Morioka; (III JMA) at Akita, Fukushima, Sendai, Tokyo and Yokohama, Honshu. Also felt (VII) on Shikotan and (VI) at Kurilsk, Kuril Islands. Landslides and subsidence occurred in the epicentral area.
JAN 19	14 39 26.1	38.649 N 133.465 E	448 G	6.0	0.9 657	SEA OF JAPAN. Mw 6.6 (GS), 6.5 (HRV). mb 6.2 (BRK). Mo=1.0*10**19 Nm (GS). Mo=6.3*10**18 Nm (HRV).
JAN 26	20 32 06.9	23.027 N 101.062 E	33 N	5.4 5.6	1.0 254	YUNNAN, CHINA. Mw 5.6 (HRV). Mo=3.1*10**17 Nm (HRV). At least 66 people injured, 6,972 houses destroyed and 21,444 seriously damaged in southwestern Yunnan Province.
JAN 27	10 27 05.6	32.104 N 60.088 E	33 N	5.1	1.1 139	NORTHERN IRAN. Three people injured and 200 houses destroyed in the Nehbandan area.
JAN 31	19 33 34.4	25.905 N 101.535 E	33 N	4.9 4.5	1.1 75	YUNNAN, CHINA. ML 4.7 (BJI). Two people were killed and some houses were slightly damaged in Dayao County.
FEB 07	13 27 42.0	37.634 N 137.245 E	11 G	6.3 6.2	0.9 673	NEAR WEST COAST OF HONSHU, JAPAN. Mw 6.6 (GS), 6.3 (HRV). Ms 5.9 (BRK). Mo=8.3*10**18 Nm (GS). Mo=3.4*10**18 Nm (HRV). Mo=1.0*10**19 Nm (PPT). At least sixteen people injured and some damage in Ishikawa, Toyama and Niigata Prefectures. Landslides occurred at Suzu. Maximum intensity IV (JMA) reported at Wajima. Felt throughout much of central Honshu.

DATE	ORIGIN TIME			GEOGRAPHIC COORDINATES		DEPTH	MAGNITUDES		SD	NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
	HR	MN	SEC	LAT	LONG		GS	Msz			
FEB 13	02	25	49.7	8.331 N	39.308 E	12 D	5.0	4.9	1.0	99	ETHIOPIA. Mw 5.3 (HRV). Mo=1.1*10**17 Nm (HRV). Some injuries and damage in the Nazret area. Felt at Addis Ababa and Debre Zeyit.
MAR 06	03	05	49.8	10.972 S	164.181 E	20 G	6.1	7.1	1.2	304	SANTA CRUZ ISLANDS REGION. Mw 7.1 (GS), 7.1 (HRV). Ms 7.2 (BRK). Mo=5.5*10**19 Nm (GS). Mo=5.2*10**19 Nm (HRV). Mo=7.0*10**19 Nm (PPT). Felt (III) at Honiara, Guadalcanal.
MAR 06	10	02	06.9	26.536 S	177.355 W	18 G	5.9	6.6	1.2	274	SOUTH OF FIJI ISLANDS. Mw 6.6 (GS), 6.5 (HRV). Ms 6.6 (BRK). Mo=8.0*10**18 Nm (GS). Mo=6.7*10**18 Nm (HRV). Mo=1.7*10**19 Nm (PPT).
MAR 06	16	26	56.9	11.062 S	163.386 E	25 D	5.7	6.6	1.1	207	SOLOMON ISLANDS. Mw 6.7 (HRV). Ms 6.5 (BRK). Mo=1.1*10**19 Nm (HRV). Mo=1.6*10**19 Nm (PPT). Felt (III) at Honiara.
MAR 10	12	39	23.9	59.700 S	25.719 W	33 N	5.4	6.4	1.2	148	SOUTH SANDWICH ISLANDS REGION. Mw 6.5 (HRV). Ms 6.7 (BRK). Mo=5.8*10**18 Nm (HRV).
MAR 12	14	01	35.4	14.385 S	178.252 W	10 G	6.0	6.4	1.2	463	FIJI ISLANDS REGION. Mw 6.4 (GS), 6.4 (HRV). Ms 6.5 (BRK). Mo=4.6*10**18 Nm (GS). Mo=4.0*10**18 Nm (HRV). Mo=4.0*10**18 Nm (PPT). Five people killed, more than 20 seriously injured and damage on Futuna Island.
MAR 15	16	08	57.8	26.708 S	70.918 W	29 G	6.0	6.2	1.1	399	NEAR COAST OF NORTHERN CHILE. Mw 6.7 (GS), 6.5 (HRV). Ms 5.9 (BRK). Mo=1.1*10**19 Nm (GS). Mo=6.4*10**18 Nm (HRV). Mo=2.2*10**19 Nm (PPT). Some damage (VI) in the Chanaral-Copiapo-Taltal area. Felt (V) at Vallenar; (IV) at Antofagasta, Mejillones, Sierra Gorda, Tocopilla and Vicuna; (III) at Andacollo, Combarbala, La Serena and Maria Elena; (II) at Calama, Coquimbo and Ovalle.
MAR 20	14	51	59.7	29.084 N	87.333 E	12 G	5.8	6.0	1.1	482	XIZANG. Mw 6.2 (HRV). Ms 5.8 (BRK). Mo=2.5*10**18 Nm (HRV). Mo=4.1*10**18 Nm (PPT). At least two people killed, 3 seriously injured and damage in Ngaming County. Felt at Xigaze. Also felt at Kathmandu, Nepal.
MAR 21	05	04	59.1	18.042 S	178.528 W	589 G	6.1		0.9	564	FIJI ISLANDS REGION. Mw 6.3 (GS), 6.3 (HRV). mb 6.5 (BRK). Mo=3.3*10**18 Nm (GS). Mo=3.3*10**18 Nm (HRV).
MAR 25	13	34	35.4	45.035 N	122.607 W	21	5.5	5.4		454	WASHINGTON-OREGON BORDER REGION. Mw 5.6 (HRV). <SEA-P>. ML 5.7 (SEA), 5.5 (BRK). Mo=1.6*10**17 Nm (BRK). Mo=3.2*10**17 Nm (HRV). Numerous people were treated for minor injuries. Damage (VII) at Canby, Molalla, Mount Angel and Newberg, Oregon. Slight damage (VI) at Amity, Aurora, Boring, Cascadia, Dayton, Donald, Dundee, Estacada, Grande Ronde, Lake Oswego, Mill City, Mulino, Oregon City, Portland, Salem, Silvertown and West Linn, Oregon. Also damage to several bridges in the McMinnville, Oregon, area. Landslides were reported near Mount Hood, Oregon. Felt (V) throughout a wide area of northwestern Oregon including Brightwood, Corvallis, Dallas, Detroit, Government Camp, Gresham, Hillsboro, Idanha, Mill City, Milwaukie, Nehalem, Pacific City, Rainier and Sandy. Also felt (V) at Camas, Kalama and Underwood, Washington. Felt south as far as Coos Bay, Oregon and north to Seattle, Washington.
MAR 26	11	58	15.1	37.589 N	21.391 E	10 G	5.2	5.2	1.2	215	SOUTHERN GREECE. Mw 5.4 (HRV). ML 4.8 (ATH), 4.8 (THE). Mo=1.6*10**17 Nm (HRV). Two people were slightly injured and damage in the Pirgos-Amalias area. Felt in Akhaia, Arkadhia, Ilia, Messinia and Zakynthos Provinces.
MAR 26	22	52	46.9	30.692 N	50.886 E	30 D	5.1	4.8	1.2	259	NORTHERN IRAN. Mw 5.1 (HRV). Mo=5.2*10**16 Nm (HRV). Considerable damage in Bovir Ahmadi va Kohkiluyeh Province.
APR 08	09	48	03.8	37.902 N	47.985 E	10 G	4.7		1.3	12	NORTHWESTERN IRAN. Several people injured in the Sarab-Ardabil area.
APR 16	14	08	38.9	17.778 S	178.864 W	565 G	6.0		1.1	585	FIJI ISLANDS REGION. Mw 6.9 (GS), 6.9 (HRV). mb 6.0 (BRK). Mo=2.6*10**19 Nm (GS). Mo=2.6*10**19 Nm (HRV). Mo=1.0*10**19 Nm (PPT).
APR 18	09	16	23.2	11.652 S	76.530 W	106 G	6.0		1.0	513	CENTRAL PERU. Mw 6.3 (GS), 6.3 (HRV). mb 5.8 (BRK). Mo=2.7*10**18 Nm (GS). Mo=2.8*10**18 Nm (HRV). Six people killed, including 3 killed by earthquake-induced landslides at Lima. Thirty houses destroyed (VI) at Lima. Felt (V) at Chimbote and Huacho; (IV) at Ica and Trujillo; (III) at Huancayo and Huaraz; (II) at Chiclayo.
APR 19	21	01	48.9	4.015 N	128.204 E	24 G	6.1	6.7	1.2	439	NORTH OF HALMAHERA, INDONESIA. Mw 6.8 (GS), 6.8 (HRV). Ms 6.8 (BRK). Mo=1.5*10**19 Nm (GS). Mo=1.6*10**19 Nm (HRV). Mo=2.8*10**19 Nm (PPT).

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DATE	ORIGIN TIME UTC HR MN SEC	GEOGRAPHIC COORDINATES LAT LONG	DEPTH	MAGNITUDES SD GS MB Msz	NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
MAY 10	09 15 08.6	40.347 N 76.018 W	5 G	0.3	9	PENNSYLVANIA. mbLg 2.8 (GS). One person in the Reading area lost his balance because of the earthquake, fell off his bicycle and was injured. Felt (IV) at Reading and (III) at Hamburg and Shillington. Also felt at West Reading, Whitfield and Wyomissing. This is believed to be one of the smallest earthquakes in the United States for which confirmed casualty reports have been received.
MAY 11	18 26 51.3	7.219 N 126.570 E	59 G	6.1 6.6	1.1 630	MINDANAO, PHILIPPINE ISLANDS. Mw 7.0 (GS), 7.0 (HRV). Ms 6.5 (BRK). Mo=3.8*10**19 Nm (GS). Mo=3.4*10**19 Nm (HRV). Mo=6.3*10**19 Nm (PPT). Felt (V RF) at Bislig and Davao; (IV RF) at Cagayan de Oro and Kidapawan; (III RF) at Cotabato. Also felt (III RF) at Palo, Leyte and (II RF) on Camiguin Island.
MAY 13	11 59 49.2&	55.177 N 160.458 W	32 G	6.4 6.8	766	ALASKA PENINSULA. Mw 6.9 (GS), 6.9 (HRV). <SPEC>. Ms 6.8 (BRK). Mo=2.3*10**19 Nm (GS). Mo=2.5*10**19 Nm (HRV). Mo=6.5*10**19 Nm (OBN). Mo=2.9*10**19 Nm (PPT). Items knocked from shelves at Sand Point and King Cove. Felt (VI) at Sand Point; (V) at Chignik, Chignik Lagoon, False Pass, King Cove, Nelson Lagoon and Perryville; (IV) at Cold Bay and Port Heiden; (III) at Akhiok and Akutan; (II) at Kodiak.
MAY 14	13 37 24.2	26.834 S 26.666 E	5 G		1.3 12	REPUBLIC OF SOUTH AFRICA. ML 3.8 (PRE). mbLg 3.6 (BUL). Some people possibly killed in a mine explosion.
MAY 15	21 52 25.3	51.374 N 178.669 W	32 G	6.2 6.6	1.1 661	ANDREANOF ISLANDS, ALEUTIAN ISLANDS. Mw 6.8 (GS), 6.9 (HRV). ML 6.1 (PMR). Ms 6.3 (BRK). Mo=2.0*10**19 Nm (GS). Mo=2.5*10**19 Nm (HRV). Mo=3.6*10**19 Nm (PPT). Felt (V) on Adak and (IV) on Amchitka.
MAY 16	21 44 48.9	15.286 S 173.332 W	21 G	6.1 6.7	1.2 515	TONGA ISLANDS. Mw 6.6 (GS), 6.6 (HRV). Ms 6.8 (BRK). Mo=8.1*10**18 Nm (GS). Mo=8.9*10**18 Nm (HRV). Mo=9.0*10**18 Nm (PPT).
MAY 17	16 02 53.1	5.343 S 151.985 E	17 G	5.7 6.3	1.1 345	NEW BRITAIN REGION, PAPUA NEW GUINEA. Mw 6.3 (GS), 6.4 (HRV). Ms 6.5 (BRK). Mo=3.1*10**18 Nm (GS). Mo=4.5*10**18 Nm (HRV). Mo=3.6*10**18 Nm (PPT). Felt (I) at Rabaul.
MAY 18	10 19 33.7	19.914 N 122.450 E	169 G	6.4	1.3 606	PHILIPPINE ISLANDS REGION. Mw 6.8 (GS), 6.7 (HRV). mb 6.6 (BRK). Mo=2.0*10**19 Nm (GS). Mo=1.3*10**19 Nm (HRV). Mo=1.1*10**19 Nm (PPT).
MAY 24	23 51 28.2?	22.67 S 66.54 W	221 G	6.6	0.8 37	JUJUY PROVINCE, ARGENTINA. Mw 7.0 (GS), 7.0 (HRV). mb 6.6 (BRK). Mo=3.3*10**19 Nm (GS). Mo=3.3*10**19 Nm (HRV). Mo=7.1*10**19 Nm (PPT). Felt in Jujuy, Salta and Tucuman Provinces. Also felt (V) in the Antofagasta-Taltal-Calama area; (IV) at Mejillones, San Pedro and Tocopilla; (III) at Iquique and (II) at Copiapo, Chile. Felt (III) at Arequipa, Peru.
JUN 06	13 23 20.8	15.823 N 146.595 E	14 G	6.0 6.6	1.2 323	MARIANA ISLANDS. Mw 6.5 (GS), 6.4 (HRV). Ms 6.4 (BRK). Mo=6.3*10**18 Nm (GS). Mo=5.2*10**18 Nm (HRV). Mo=9.1*10**18 Nm (PPT). Felt on Saipan.
JUN 08	13 03 36.4	51.218 N 157.829 E	71 G	6.4 7.3	1.0 662	NEAR EAST COAST OF KAMCHATKA. Mw 7.1 (GS), 7.5 (HRV). Ms 7.2 (BRK). Mo=5.4*10**19 Nm (GS). Mo=2.0*10**20 Nm (HRV). Mo=1.8*10**10 Nm (OBN). Mo=3.0*10**20 Nm (PPT). Damage (VII) at Severo-Kurilsk. Felt (VI) at Petropavlovsk-Kamchatskiy. Maximum tsunami wave heights (peak-to-trough) recorded at selected tide stations were as follows: 12 cm. at Hilo, 10 cm. on Shemya, 8 cm. on Midway Island and 5 cm. at Haleiwa, Hawaii.
JUN 08	23 17 41.4	31.560 S 69.234 W	113 G	6.5	0.9 558	SAN JUAN PROVINCE, ARGENTINA. Mw 6.3 (GS), 6.3 (HRV). mb 6.4 (BRK). Mo=3.5*10**18 Nm (GS). Mo=3.2*10**18 Nm (HRV). Mo=3.1*10**18 Nm (PPT). Felt (VI) in Mendoza Province, Argentina. Felt (V) at Illapel, (IV) at Valparaiso and (III) at Copiapo, La Serena, Quilloto and Santiago, Chile. Also felt in Cordoba, La Rioja and San Juan Provinces, Argentina.
JUN 18	11 52 51.6*	29.053 S 176.753 W	16 G	6.2 6.7	1.2 55	KERMADEC ISLANDS REGION. Mw 6.6 (GS), 6.6 (HRV). Ms 7.1 (BRK). Mo=7.6*10**18 Nm (GS). Mo=8.8*10**18 Nm (HRV). Mo=1.6*10**19 Nm (PPT).
JUN 18	17 57 46.6	28.678 S 176.893 W	11 D	5.9 6.7	1.1 322	KERMADEC ISLANDS REGION. Mw 6.7 (GS), 6.5 (HRV). Ms 7.1 (BRK). Mo=1.2*10**19 Nm (GS). Mo=7.0*10**18 Nm (HRV). Mo=1.3*10**19 Nm (PPT).
JUN 22	16 32 43.7	30.149 N 50.814 E	33 N	5.5 4.8	0.9 293	NORTHERN IRAN. Mw 5.4 (HRV). Mo=1.3*10**17 Nm (HRV). Several people injured and at least 70 homes destroyed in Bovir Ahmadi va Kohkiluyeh Province. Landslides blocked roads in the epicentral area.

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DATE	ORIGIN TIME			GEOGRAPHIC		DEPTH	MAGNITUDES			SD	NO. STA USED	REGION, CONTRIBUTED	MAGNITUDES	AND COMMENTS
	UTC	HR	MN	SEC	LAT		LONG	GS	MB					
JUN 30	23	47	33.9	20.836	S	172.957	E	13	G	5.9	6.7	1.3	270	VANUATU ISLANDS REGION. Mw 6.7 (GS), 6.7 (HRV). Mo=1.3*10**19 Nm (GS). Mo=1.3*10**19 Nm (HRV). Mo=2.6*10**19 Nm (PPT).
JUL 10	20	40	58.9	9.821	N	83.622	W	20	D	5.3	5.6	1.3	256	COSTA RICA. Mw 5.8 (HRV). MD 5.2 (HDC). Mo=6.6*10**17 Nm (HRV). One person was killed, another died of a heart attack and at least nine people were injured in the Turrialba area. Damage occurred to homes and buildings at Cartago and Turrialba. Landslides blocked roads in the epicentral area. Felt throughout Costa Rica.
JUL 11	13	36	21.2	25.304	S	70.166	W	48	G	6.2	6.1	1.2	459	NEAR COAST OF NORTHERN CHILE. Mw 6.6 (GS), 6.6 (HRV). Ms 5.8 (BRK). Mo=8.6*10**18 Nm (GS). Mo=1.0*10**19 Nm (HRV). Mo=2.5*10**19 Nm (PPT). Slight damage (VI) at Taltal. Felt (V) at Antofagasta, Chanaral, Copiapo, Mejillones and Socaire; (IV) at Baquedano and Calama; (III) at Caldera and Vallenar. Landslides occurred in the epicentral area.
JUL 12	13	17	11.9	42.851	N	139.197	E	17	G	6.6	7.6	1.0	762	HOKKAIDO, JAPAN REGION. Mw 7.3 (GS), 7.7 (HRV). Ms 7.3 (BRK). Mo=1.1*10**20 Nm (GS). Mo=4.7*10**20 Nm (HRV). Mo=1.0*10**21 Nm (PPT). At least 200 people were killed and 39 missing in the Hokkaido region, including at least 165 killed on Okushiri. One person on a fishing boat was killed off Aomori, Honshu. Three people were missing from the southeast coast of Russia. Severe damage (V JMA) was caused by the earthquake and accompanying fires, landslides and tsunami in southwestern Hokkaido, where 540 houses were destroyed and 1,834 others were damaged. Approximately 600 fishing boats were damaged or lost off western Japan, southeastern Russia and South Korea. Tsunami wave heights as high as 30.6 meters was reported along the southwest coast of Okushiri Island, 10 meters along the west coast of Hokkaido, 3 meters at Nakhodka, Russia, 2 meters along the northeast coast of South Korea and nearly 1 meter at Aomori, Honshu. The tsunami affected much of the southeastern coast of Russia and also caused damage to a factory at Kamenka, Sakhalin Island.
JUL 14	12	31	49.4	38.224	N	21.756	E	23	D	5.3	5.5	1.3	412	GREECE. Mw 5.6 (HRV). MD 5.5 (VIE), 5.2 (HLW), 5.0 (ATH). ML 4.9 (TIR), 4.8 (THE). Mo=3.2*10**17 Nm (HRV). At least five people were injured and 200 buildings were damaged at Patras. Felt as far as Attiki Province.
JUL 22	04	57	07.0	6.470	N	71.210	W	20	G	6.1	5.9	1.1	557	NORTHERN COLOMBIA. Mw 6.1 (GS), 6.0 (HRV). Ms 5.6 (BRK). Mo=1.5*10**18 Nm (GS). Mo=1.3*10**18 Nm (HRV). Mo=3.0*10**18 Nm (PPT). Two people killed, some injured and many houses destroyed at Puerto Rondon, Puerto Colombia. Felt strongly in northeastern Colombia and western Venezuela. Also felt at Bogota, Colombia and Caracas, Venezuela.
AUG 01	00	20	40.5	15.385	N	31.690	E	13	D	5.2	5.1	1.1	241	SUDAN. Mw 5.5 (HRV). Mo=2.2*10**17 Nm (HRV). At least two people killed, nine injured and damage in the Khartoum area.
AUG 04	11	31	18.0	1.629	S	99.615	E	32	G	5.9	6.3	1.0	434	SOUTHERN SUMATERA, INDONESIA. Mw 6.5 (GS), 6.4 (HRV). Ms 6.2 (BRK). Mo=6.2*10**18 Nm (GS). Mo=5.1*10**18 Nm (HRV). Mo=4.0*10**18 Nm (PPT). Felt strongly in the Padang area.
AUG 07	17	53	24.2	23.866	S	179.846	E	523	G	6.0		1.0	524	SOUTH OF FIJI ISLANDS. Mw 6.7 (GS), 6.7 (HRV). mb 5.9 (BRK). Mo=1.3*10**19 Nm (GS). Mo=1.3*10**19 Nm (HRV). Mo=1.0*10**19 Nm (PPT).
AUG 07	19	42	41.9	41.985	N	139.839	E	14	G	6.2	6.1	0.9	587	HOKKAIDO, JAPAN REGION. Mw 6.5 (GS), 6.3 (HRV). Ms 5.6 (BRK). Mo=6.9*10**18 Nm (GS). Mo=3.0*10**18 Nm (HRV). Mo=7.6*10**18 Nm (PPT). Felt (V JMA) on Okushiri. Also felt on Hokkaido.
AUG 08	08	34	24.9	12.982	N	144.801	E	59	G	7.1	8.0	1.1	438	SOUTH OF MARIANA ISLANDS. Mw 7.5 (GS), 7.8 (HRV). Ms 8.2 (BRK). Mo=2.2*10**20 Nm (GS). Mo=5.2*10**20 Nm (HRV). Mo=7.8*10**20 Nm (OBN). Mo=9.0*10**20 Nm (PPT). Forty-eight people injured on Guam. Extensive damage (IX) to hotels in the Tumon Bay area. Cracks tens of meters long and 25-50 cm wide, caused by liquefaction in the underlying soil, damaged facilities at the commercial port and naval base at Apra Harbor. Damage (VII) occurred at several locations in the northern half of the island. One end of the approach to a bridge at Pago Bay fell more than 35 cm. Many landslides and rockslides were reported, mainly in the southern half of the island. The preliminary estimate of loss from damage to commercial buildings is placed at 112 million U.S. dollars and loss from damage to private residences is estimated at several million U.S. dollars. Slight damage (V) on Saipan. Felt (VI) on Rota and (V) on Tinian. Tsunami generated with maximum wave heights at selected tide stations as follows: 98 cm at Muroto-misaki, Shikoku; 68 cm on Chichi-shima, Bonin Islands; 58 cm at Tosashimizu, Shikoku; 56 cm at Aburatsu, Kyushu; 46 cm at Mera and Owase, Honshu; 44 cm at Ayukawahama, Honshu; 42 cm at Omae-zaki, Honshu; 34 cm at Hanasaki and Kushimoto, Honshu; 34 cm at Hirara, Ryukyu Islands; 28 cm at Ofunato, Honshu; 24 cm at Kochi, Shikoku; 19 cm at Port Allen, Kauai; 15 cm at Lahaina, Maui; 14 cm at Haleiwa, Oahu; 12 cm at Hachinohe, Honshu and Kahului, Maui; 7 cm at Kapoho, Hawaii and Nawiliwili, Kauai; 5 cm at Honokohau, Hawaii.

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DATE	ORIGIN TIME			GEOGRAPHIC COORDINATES		DEPTH	MAGNITUDES			SD	NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
	UTC	HR	MN	SEC	LAT		LONG	GS	MB			
AUG 09	12	42	48.1	36.379	N 70.868	E 215	G 6.2		1.2	601	HINDU KUSH REGION, AFGHANISTAN. Mw 7.0 (GS), 7.0 (HRV). Mo=3.1*10**19 Nm (GS). Mo=3.6*10**19 Nm (HRV). Mo=5.0*10**19 Nm (PPT). Felt in northern and eastern Pakistan as far south as Multan. Felt at Delhi and other parts of northern India. Felt in eastern Jammu and Kashmir. Also felt (III) at Dushanbe, Tajikistan.	
AUG 10	00	51	53.2	45.277	S 166.927	E 28	G 6.2 7.0		1.1	420	OFF WEST COAST OF SOUTH ISLAND, NEW ZEALAND. Mw 7.0 (GS), 7.0 (HRV). Mo=3.3*10**19 Nm (GS). Mo=3.3*10**19 Nm (HRV). Mo=4.0*10**19 Nm (PPT). Felt (VI) on South Island within 150 km of the epicenter. Power outages reported in the Te Anau area. Felt throughout South Island and in southern North Island. Also felt at Sydney, Australia.	
AUG 10	09	46	35.3	38.520	S 177.553	E 14	G 6.0 6.0		1.1	280	NORTH ISLAND, NEW ZEALAND. Mw 6.4 (HRV). ML 6.5 (WEL). Mo=4.4*10**18 Nm (HRV). Mo=5.4*10**18 Nm (PPT). Some damage (VII) at Gisborne. Felt (VII) within 100 km of the epicenter. Felt in central and southern North Island.	
AUG 20	05	06	53.8	5.997	S 142.743	E 15	G 6.0 6.0		1.1	475	NEW GUINEA, PAPUA NEW GUINEA. Mw 6.2 (GS), 6.2 (HRV). Ms 6.4 (BRK). Mo=2.3*10**18 Nm (GS). Mo=2.1*10**18 Nm (HRV). Mo=1.2*10**18 Nm (PPT). Five people injured and damage in the Tari area.	
SEP 03	12	35	00.2	14.523	N 92.713	W 27	G 5.8 6.8		1.1	416	NEAR COAST OF CHIAPAS, MEXICO. Mw 6.8 (GS), 6.8 (HRV). Ms 6.7 (BRK). Mo=1.6*10**19 Nm (GS). Mo=1.5*10**19 Nm (HRV). Mo=2.0*10**19 Nm (PPT). Felt in Chiapas, Guerrero, Michoacan and at Mexico City. Also felt (III) at San Salvador, El Salvador.	
SEP 06	03	56	00.1	4.641	S 153.231	E 49	G 6.2 6.6		0.9	492	NEW IRELAND REGION, PAPUA NEW GUINEA. Mw 6.6 (GS), 6.6 (HRV). Ms 6.7 (BRK). Mo=9.6*10**18 Nm (GS). Mo=1.0*10**19 Nm (HRV). Mo=1.4*10**19 Nm (PPT). Felt (V) at Rabaul.	
SEP 07	02	48	50.8	31.635	S 179.440	W 10	G 5.9 6.5		1.2	206	KERMADEC ISLANDS REGION. Mw 6.5 (GS), 6.4 (HRV). Ms 6.5 (BRK). Mo=6.6*10**18 Nm (GS). Mo=4.8*10**18 Nm (HRV). Mo=3.4*10**18 Nm (PPT).	
SEP 10	19	12	54.6	14.717	N 92.645	W 34	G 6.2 7.3		1.3	466	NEAR COAST OF CHIAPAS, MEXICO. Mw 7.2 (GS), 7.2 (HRV). Ms 7.2 (BRK). Mo=8.0*10**19 Nm (GS). Mo=8.3*10**19 Nm (HRV). Mo=1.0*10**20 Nm (PPT). One person killed, 3 injured and considerable damage in southwestern Guatemala. Rockslides blocked some roads in Guatemala. Some damage in parts of Chiapas, Mexico. Felt strongly in southern Mexico and as far away as Mexico City. Felt in much of Central America.	
SEP 21	03	28	55.4	42.314	N 122.012	W 11	G 5.7 5.8		1.2	534	OREGON. Mw 6.0 (GS), 6.0 (HRV). ML 5.9 (BRK). MD 5.9 (SEA). Mo=7.8*10**17 Nm (BRK). Mo=1.0*10**18 Nm (GS). Mo=1.1*10**18 Nm (HRV). Mo=1.7*10**18 Nm (PPT). The Klamath Falls earthquakes caused two deaths and approximately 7.5 million U.S. dollars in damage. One person was killed when the car he was driving was crushed by a boulder in an earthquake-induced rockfall and another person died of a heart attack. More than 1,000 homes and commercial buildings were damaged. Maximum intensity VII in downtown Klamath Falls and at the Oregon Institute of Technology about three kilometers north of downtown. Three highways leading to Klamath Falls were temporarily closed because of rockfalls or concern about possible damage to bridges. Rockfalls and rockslides occurred in roadcuts and on steep slopes throughout the epicentral region. Ground cracks in fill material were observed at several locations in the area. Felt in southern Oregon as far north as Eugene and in northern California as far south as Redding.	
SEP 21	05	45	33.7	42.358	N 122.045	W 5	G 5.6 5.8		1.3	515	OREGON. Mw 6.0 (HRV). ML 5.9 (BRK). MD 6.0 (SEA). Mo=8.1*10**17 Nm (BRK). Mo=1.0*10**18 Nm (HRV). Mo=1.5*10**18 Nm (PPT). Additional damage in the Klamath Falls area. At some locations northwest of Klamath Falls this earthquake produced higher intensities than the event which occurred at 0328.	
SEP 27	13	37	32.9	53.651	S 51.621	W 33	N 6.2 6.6		1.2	189	SOUTH ATLANTIC OCEAN. Mw 6.6 (GS), 6.6 (HRV). Ms 6.3 (BRK). Mo=8.2*10**18 Nm (GS). Mo=9.1*10**18 Nm (HRV). Mo=1.9*10**19 Nm (PPT). Felt on the Falkland Islands.	
SEP 29	22	25	48.6	18.066	N 76.451	E 7	G 6.3 6.2		1.0	625	SOUTHERN INDIA. Mw 6.2 (GS), 6.2 (HRV). Mo=1.9*10**18 Nm (GS). Mo=2.2*10**18 Nm (HRV). Mo=3.1*10**18 Nm (PPT). Nine thousand seven hundred forty-eight people killed, about 30,000 injured and extreme devastation in the Latur-Osmanabad area. Nearly all buildings were destroyed in the village of Khillari. Felt in large parts of central and southern India, including Bangalore, Bombay, Hyderabad and Madras.	
SEP 30	18	27	50.8	15.417	N 94.698	W 19	G 5.8 6.4		1.1	346	NEAR COAST OF OAXACA, MEXICO. Mw 6.5 (HRV). Ms 6.5 (BRK). Mo=6.0*10**18 Nm (HRV). Mo=1.1*10**19 Nm (PPT). Felt on the Isthmus of Tehuantepec and at Veracruz. Felt slightly at Mexico City.	
OCT 05	01	59	56.6	41.667	N 88.695	E 0	G 5.9 4.7		0.9	502	SOUTHERN XINJIANG, CHINA. Underground nuclear explosion (DOE press release).	

DATE	ORIGIN TIME			GEOGRAPHIC COORDINATES		DEPTH	MAGNITUDES SD			NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS			
	UTC	HR	MN	SEC	LAT		LONG	GS	MB			MsZ		
OCT 05	05	09	45.7	6.130	S	128.965	E	13	D	5.9	6.1	1.2	245	BANDA SEA. Mw 6.6 (GS), 6.4 (HRV). Mo=8.8*10**18 Nm (GS). Mo=4.0*10**18 Nm (HRV). Mo=1.6*10**19 Nm (PPT).
OCT 11	15	54	21.2	32.020	N	137.832	E	351	G	6.4		1.0	668	SOUTH OF HONSHU, JAPAN. Mw 6.8 (GS), 6.9 (HRV). mb 6.7 (BRK). Mo=2.0*10**19 Nm (GS). Mo=2.5*10**19 Nm (HRV). Mo=3.9*10**19 Nm (PPT). One person died of a heart attack and four other people were injured in the Tokyo area. Felt (IV JMA) at Tokyo and Yokohama; (III JMA) at Chiba, Fukushima and Utsunomiya; (II JMA) at Kushiro, Morioka and Sendai.
OCT 13	02	06	00.3	5.889	S	146.020	E	25	G	6.4	7.0	1.3	423	EASTERN NEW GUINEA REGION, PAPUA NEW GUINEA. Mw 6.6 (GS), 6.9 (HRV). Ms 7.2 (BRK). ML 7.1 (PMG). Mo=8.1*10**18 Nm (GS). Mo=2.5*10**19 Nm (HRV). Mo=1.4*10**19 Nm (PPT). Sixty people were killed and several injured in the Upper Markham Valley. Large landslides blocked the Ume River and contributed to many of the casualties.
OCT 13	03	07	30.9	5.932	S	146.153	E	33	N	6.1	6.7	1.2	267	EASTERN NEW GUINEA REGION, PAPUA NEW GUINEA. Mw 6.5 (HRV). Ms 6.7 (BRK). ML 6.5 (PMG). Mo=7.2*10**18 Nm (HRV).
OCT 16	03	05	30.3	5.898	S	146.202	E	27	G	6.2	6.4	1.0	382	EASTERN NEW GUINEA REG., P.N.G. Mw 6.3 (GS), 6.3 (HRV). Ms 6.5 (BRK). ML 6.5 (PMG). Mo=3.2*10**18 Nm (GS). Mo=3.0*10**18 Nm (HRV). Mo=4.7*10**18 Nm (PPT). Three people killed and additional damage in the Upper Markham Valley.
OCT 20	16	15	59.6	28.723	N	82.280	E	37	D	5.1		0.9	104	NEPAL. MD 4.7 (NDI). At least 55 people injured and 46 houses severely damaged in northwestern Nepal. Felt in parts of Uttar Pradesh, India.
OCT 24	07	52	15.6	16.755	N	98.717	W	21	G	6.3	6.7	1.0	506	NEAR COAST OF GUERRERO, MEXICO. Mw 6.7 (GS), 6.6 (HRV). Ms 6.5 (BRK). Mo=1.2*10**19 Nm (GS). Mo=1.0*10**19 Nm (HRV). Mo=1.4*10**19 Nm (PPT). Felt (VII) at Mexico City and (V) at Puebla.
OCT 25	10	27	04.5	5.909	S	145.990	E	30	D	6.3	7.0	1.2	416	EASTERN NEW GUINEA REGION, PAPUA NEW GUINEA. Mw 6.7 (GS), 6.7 (HRV). Ms 7.1 (BRK). ML 6.6 (PMG). Mo=1.2*10**19 Nm (GS). Mo=1.2*10**19 Nm (HRV). Mo=1.0*10**19 Nm (PPT). Felt (III) at Rabaul.
NOV 12	13	27	28.1	18.120	N	76.533	E	10	G	4.6		0.8	34	SOUTHERN INDIA. At least 25 people injured and more than 100 houses damaged in the Latur area. Felt in the Osmanabad-Sholapur-Gulbarga area.
NOV 13	01	18	04.1	51.934	N	158.647	E	34	G	6.5	7.0	1.0	699	NEAR EAST COAST OF KAMCHATKA. Mw 7.0 (GS), 7.0 (HRV). Ms 6.7 (BRK). Mo=3.8*10**19 Nm (GS). Mo=4.0*10**19 Nm (HRV). Mo=3.9*10**19 Nm (PPT). Felt (VI) at Petropavlovsk-Kamchatskiy and (IV) at Severo-Kurilsk.
NOV 19	01	43	23.7	54.287	N	164.164	W	30	G	6.1	6.4	1.2	634	UNIMAK ISLAND REGION. Mw 6.5 (HRV). Ms 6.0 (BRK). Mo=5.7*10**18 Nm (HRV). Mo=5.0*10**18 Nm (PPT). Slight damage (VI) at False Pass where items were overturned and a television was knocked onto the floor. Felt (V) at Akutan and King Cove, (IV) at Cold Bay and (II) at Sand Point.
NOV 22	22	43	26.4	11.743	N	86.135	W	108	D	5.2		1.2	298	NEAR COAST OF NICARAGUA. Mw 5.9 (HRV). mb 5.8 (BRK). Mo=9.1*10**17 Nm (HRV). Mo=1.6*10**18 Nm (PPT). One person died from possible heart attack during the earthquake. Felt (V) in the Cosiguina-Tipitapa-Rivas area, (IV) at Las Banderas and Los Zarzales and (III) at Sapoa.
NOV 30	20	37	12.8	39.263	N	75.533	E	18	D	5.2	5.6	1.0	209	SOUTHERN XINJIANG, CHINA. Mw 5.6 (HRV). Mo=2.8*10**17 Nm (HRV). At least four people were injured and about 100 houses destroyed in the Shufu area.
DEC 09	04	32	19.5	0.486	N	125.995	E	15	G	6.5	6.7	1.2	493	NORTHERN MOLUCCA SEA. Mw 6.8 (GS), 6.9 (HRV). Ms 6.7 (BRK). Mo=1.8*10**19 Nm (GS). Mo=2.9*10**19 Nm (HRV). Mo=4.5*10**19 Nm (PPT). Felt (IV) at Manado and Ternate, Indonesia.
DEC 09	11	38	27.9	0.425	N	125.891	E	16	G	6.3	6.4	1.2	362	NORTHERN MOLUCCA SEA. Mw 6.6 (GS), 6.8 (HRV). Ms 6.3 (BRK). Mo=8.5*10**18 Nm (GS). Mo=1.5*10**19 Nm (HRV). Mo=2.2*10**19 Nm (PPT). Felt (III) at Manado and (II) at Ternate, Indonesia.
DEC 29	07	48	14.2	20.230	S	169.789	E	33	N	6.1	6.7	1.1	339	VANUATU ISLANDS. Mw 6.4 (GS), 7.0 (HRV). Ms 6.8 (BRK). Mo=3.9*10**18 Nm (GS). Mo=3.7*10**19 Nm (HRV). Mo=7.3*10**19 Nm (PPT).

1993

DATE	ORIGIN TIME UTC HR MN SEC	GEOGRAPHIC COORDINATES LAT LONG	DEPTH	MAGNITUDES SD GS MB Msz	NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
DEC 29	08 39 44.8	19.990 S 169.857 E	33 N	6.1 6.5 1.1	286	VANUATU ISLANDS. Mw 6.5 (HRV). Mo=5.5*10**18 Nm (HRV).

 OTHER NOTABLE NORTH AMERICAN EARTHQUAKES IN 1993

APR 29	08 21 00.8	35.611 N 112.112 W	10 G	5.5 5.0 1.0	266	WESTERN ARIZONA. Mw 5.3 (HRV). Mo=1.0*10**17 Nm (HRV). Some damage at Big Water, Utah and additional damage at Pipe Springs National Monument. Slight damage (V) in the Flagstaff area and short power outages at Grand Canyon Village, Tusayan and Valle. Felt (V) at Ash Fork, Bellemont, Clarkdale, Cottonwood, Parks, Peach Springs and Sedona; (IV) at Fredonia, Gray Mountain, Jerome, Page, Paulden, Seligman, Williams and Winslow; (III) at Chinle, Chloride, Colorado City, Cornville, Grand Canyon, Kirkland and Pine. Felt (V) at Bryce, Cedar City, Kanab and Springdale, Utah; (IV) at Hurricane and Tropic, Utah. Felt at Lake Powell, Orderville, Rockville and St. George, Utah. Also felt at Cottonwood Cove, Las Vegas, Overton and Searchlight, Nevada.
MAY 17	23 20 49.2&	37.171 N 117.775 W	7	6.0 6.0	515	CALIFORNIA-NEVADA BORDER REGION. Mw 6.1 (GS), 6.1 (HRV). <GM-P>. MD 6.1 (GM), 6.2 (PAS). ML 6.2 (BRK). Mo=1.6*10**18 Nm (GS). Mo=1.8*10**18 Nm (HRV). Mo=1.0*10**18 Nm (PPT). Minor damage (V) at Independence and Lone Pine, California. Felt (V) at Big Pine, Bishop, Mojave, North Fork and Olancho; (IV) at Benton, Darwin, Inyokern, Lake Isabella, Lemoore, Miramonte, Onyx, Piedra, Reedley, Selma, Sequoia National Park, Strathmore, Three Rivers and Trona, California. Felt (V) at Beatty, Dyer, Goldfield and Tonopah; (IV) at Amargosa Valley, Nevada. Felt throughout a wide area of California and Nevada from the San Francisco Bay area, Sacramento and Los Angeles, California to Carson City, Ely and Las Vegas, Nevada. A large rockslide occurred about 7 kilometers east of Eureka Valley Sand Dunes.
DEC 04	22 15 19.5&	42.303 N 122.011 W	8	5.2 5.2	322	OREGON. <SEA-P>. Mw 5.4 (HRV). ML 5.4 (BRK). Mo=1.6*10**17 Nm (HRV). Mo=1.2*10**17 Nm (PPT). Damage (VII) at Klamath Falls. Also slight damage (VI) at Tulelake, California. Felt (V) at Bonanza, Chiloquin, Dairy, Malin, Medford, Merrill and Midland; (IV) at Ashland, Eagle Point, Fort Klamath, Gold Hill, Grants Pass, Jacksonville, Keno, Phoenix, Prospect and Trail. Also felt (V) at Canby and Dorris; (IV) at Cedarville, Etna, Grenada, Montague and Yreka, California.

 1994

JAN 03	05 52 27.6	36.028 N 100.104 E	8 G	5.8 5.5 1.0	385	QINGHAI, CHINA. Mw 5.7 (GS), 5.7 (HRV). Mo=4.2*10**17 Nm (GS). Mo=4.3*10**17 Nm (HRV). Five people injured and at least 56 houses damaged in the Gonghe area. Felt at Xining and Lanzhou.
JAN 10	15 53 50.1	13.339 S 69.446 W	596 G	6.4	1.0 601	PERU-BOLIVIA BORDER REGION. Mw 6.9 (GS), 6.9 (HRV). mb 6.4 (BRK). Mo=2.6*10**19 Nm (GS). Mo=2.5*10**19 Nm (HRV). Mo=1.7*10**19 Nm (PPT). Felt (III) at Arequipa, Peru and (II) at La Paz, Bolivia.
JAN 17	12 30 55.3&	34.213 N 118.537 W	18	6.4 6.8	696	SOUTHERN CALIFORNIA. <PAS-P>. Mw 6.7 (GS), 6.7 (HRV), 6.7 (PAS). ML 6.7 (BRK). Mo=1.2*10**19 Nm (BRK). Mo=1.2*10**19 Nm (GS). Mo=1.2*10**19 Nm (HRV). Mo=3.6*10**19 Nm (PPT). Sixty people were killed, more than 7,000 injured, 20,000 homeless and more than 40,000 buildings damaged in Los Angeles, Ventura, Orange and San Bernardino Counties. Severe damage occurred in the San Fernando Valley: maximum intensities of (IX) were observed in and near Northridge and in Sherman Oaks. Lesser, but still significant damage occurred at Fillmore, Glendale, Santa Clarita, Santa Monica, Simi Valley and in western and central Los Angeles. Damage was also sustained to Anaheim Stadium. Collapsed overpasses closed sections of the Santa Monica Freeway, the Antelope Valley Freeway, the Simi Valley Freeway and the Golden State Freeway. Fires caused additional damage in the San Fernando Valley and at Malibu and Venice. Preliminary estimates of damage are between 13 and 20 billion U.S. dollars. Felt throughout much of southern California and as far away as Turlock, California; Las Vegas, Nevada; Richfield, Utah and Ensenada, Mexico. The maximum recorded acceleration exceeded 1.0g at several sites in the area with the largest value of 1.8g recorded at Tarzana, about 7 km south of the epicenter. A maximum uplift of about 15 cm occurred in the Santa Susana Mountains and many rockslides occurred in mountain areas, blocking some roads. Some ground cracks were observed at Granada Hills and in Potrero Canyon. Some liquefaction occurred at Simi Valley and in some other parts of the Los Angeles Basin.
JAN 17	23 33 30.6&	34.326 N 118.698 W	10	5.7 5.9	324	SOUTHERN CALIFORNIA. <PAS-P>. Mw 5.9 (GS), 5.9 (HRV). ML 5.6 (PAS). Mo=6.7*10**17 Nm (GS). Mo=7.0*10**17 Nm (HRV). Mo=2.9*10**18 Nm (PPT). Mo=1.0*10**18 Nm (BRK). Additional damage in the epicentral area.
JAN 19	01 53 34.9	3.176 S 135.970 E	23 G	6.1 6.8 1.2	283	IRIAN JAYA REGION, INDONESIA. Mw 6.7 (GS), 6.8 (HRV). Ms 6.7 (BRK). Mo=1.4*10**19 Nm (GS). Mo=1.5*10**19 Nm (HRV). Mo=2.2*10**19 Nm (PPT). Felt at Biak, Nabire and Timuka.
JAN 21	02 24 29.9	1.015 N 127.733 E	20 G	6.2 7.2 1.2	260	HALMAHERA, INDONESIA. Mw 7.0 (GS), 7.0 (HRV). Ms 7.3 (BRK). Mo=3.2*10**19 Nm (GS). Mo=3.2*10**19 Nm (HRV). Mo=2.0*10**19 Nm (OBN). Mo=8.4*10**19 Nm (PPT). Seven people killed, 40 injured and 550 houses damaged in the Kau area. Felt strongly at Ternate.

DATE	ORIGIN TIME			GEOGRAPHIC		DEPTH	MAGNITUDES SD			NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS			
	UTC	HR	MN	SEC	LAT		LONG	GS	MB			MsZ		
FEB 05	23	34	09.9	0.593	N	30.037	E	14	G	5.8	6.0	1.1	413	UGANDA. Mw 6.2 (GS), 6.2 (HRV). Mo=2.0*10**18 Nm (GS). Mo=2.1*10**18 Nm (HRV). Mo=1.1*10**18 Nm (PPT). At least two people killed, several injured and most buildings damaged in the Fort Portal area. Two people killed and one injured by a landslide at Kasese. Felt at Kampala and in eastern Zaire.
FEB 11	21	17	31.1	18.773	S	169.169	E	206	G	6.4		1.2	576	VANUATU ISLANDS. Mw 6.9 (GS), 6.8 (HRV). mb 6.8 (BRK). Mo=2.8*10**19 Nm (GS). Mo=2.1*10**19 Nm (HRV). Mo=3.4*10**19 Nm (PPT).
FEB 12	04	16	26.8	10.786	S	128.798	W	15	G	6.3	6.6	1.3	373	SOUTH PACIFIC OCEAN. Mw 6.0 (GS), 6.7 (HRV). Ms 6.6 (BRK). Mo=1.0*10**18 Nm (GS). Mo=1.1*10**19 Nm (HRV). Mo=1.3*10**19 Nm (PPT).
FEB 12	17	06	58.1	32.056	N	130.577	E	31	D	4.8	5.3	1.1	87	KYUSHU, JAPAN. Mw 5.4 (HRV). Mo=1.5*10**17 Nm (HRV). One person slightly injured at Okuchi. Felt (IV JMA) at Akune and Hitoyoshi; (III JMA) at Kagoshima and Makurazaki. Also felt (IV JMA) at Ushibuka, Shimo-jima.
FEB 12	17	58	23.9	20.553	S	169.361	E	28	G	6.4	7.1	1.0	536	VANUATU ISLANDS. Mw 7.0 (GS), 7.0 (HRV). Ms 7.2 (BRK). Mo=3.6*10**19 Nm (GS). Mo=3.3*10**19 Nm (HRV). Mo=4.4*10**19 Nm (PPT). Felt at Port-Vila.
FEB 15	17	07	43.8	4.967	S	104.302	E	23	G	5.9	7.0	1.3	360	SOUTHERN SUMATERA, INDONESIA. Mw 6.6 (GS), 6.9 (HRV). Ms 6.8 (BRK). Mo=1.0*10**19 Nm (GS). Mo=2.2*10**19 Nm (HRV). Mo=5.1*10**19 Nm (PPT). At least 207 people killed, more than 2,000 injured, 75,000 homeless and extensive damage from landslides, mudslides and fires in Lampung Province. Much of the damage and loss of life occurred in the Liwa area. At least 6,000 homes, shops and government buildings were damaged or destroyed from landslides in the Liwa area. Damage estimated to be about 169 million U.S. dollars. Felt throughout much of southern Sumatera and parts of western Jawa. Felt at Jakarta and in Singapore.
FEB 15	21	11	56.4	20.399	S	168.866	E	20	G	5.7	6.4	1.3	211	LOYALTY ISLANDS. Mw 6.4 (GS), 6.5 (HRV). Ms 6.5 (BRK). Mo=3.9*10**18 Nm (GS). Mo=5.9*10**18 Nm (HRV). Mo=7.7*10**18 Nm (PPT).
FEB 16	06	48	58.0*	18.991	S	168.134	E	13	G	5.9	6.4	1.4	55	VANUATU ISLANDS. Mw 6.4 (GS), 6.4 (HRV). Ms 6.5 (BRK). Mo=3.8*10**18 Nm (GS). Mo=4.0*10**18 Nm (HRV). Mo=7.0*10**18 Nm (PPT).
FEB 23	08	02	04.7	30.853	N	60.596	E	6	G	6.1	6.1	1.0	510	NORTHERN IRAN. Mw 6.0 (GS), 6.1 (HRV). Mo=1.2*10**18 Nm (GS). Mo=1.7*10**18 Nm (HRV). Mo=5.0*10**18 Nm (PPT). Six people killed and many injured in the Sistan region.
MAR 01	03	49	00.8	29.096	N	52.617	E	13	G	5.8	6.0	1.1	407	SOUTHERN IRAN. Mw 6.0 (GS), 6.1 (HRV). Mo=1.0*10**18 Nm (GS). Mo=1.4*10**18 Nm (HRV). At least two people killed, fifty injured and damage in the Firuzabad area. Landslides blocked roads in the mountainous region of Fars Province. Felt at Mamasani and Fasa.
MAR 02	03	38	03.8	19.803	N	72.799	W	59	D	5.2	5.0	1.1	245	HAITI REGION. Mw 5.4 (HRV). Ms 5.1 (BRK). Mo=1.6*10**17 Nm (HRV). Four people killed and damage to houses in the St. Luis du Nord area. Felt (V) at Dajabon, Mao and Villa Vasquez; (IV) at Santiago; (III) at Santo Domingo, Dominican Republic. Felt in eastern Cuba as far west as Santiago de Cuba and Holguin.
MAR 09	23	28	06.7	18.039	S	178.413	W	563	G	6.6		1.0	655	FIJI ISLANDS REGION. Mw 7.5 (GS), 7.6 (HRV). Mo=2.3*10**20 Nm (GS). Mo=3.1*10**20 Nm (HRV). Mo=3.4*10**20 Nm (PPT). Felt at Suva and Lautoka, Viti Levu.
MAR 14	04	30	15.7	1.278	S	23.569	W	10	G	6.2	6.4	1.4	220	CENTRAL MID-ATLANTIC RIDGE. Mw 7.0 (GS), 7.0 (HRV). Ms 6.3 (BRK). Mo=3.7*10**19 Nm (GS). Mo=4.1*10**19 Nm (HRV). Mo=4.7*10**19 Nm (PPT).
MAR 14	20	51	24.9	15.994	N	92.428	W	164	G	5.8	6.2	1.2	502	MEXICO-GUATEMALA BORDER REGION. Mw 6.9 (GS), 6.9 (HRV). MD 6.2 (SSS). Ms 6.1 (BRK). Mo=2.4*10**19 Nm (GS). Mo=2.2*10**19 Nm (HRV). Mo=4.6*10**19 Nm (PPT). Slight damage at Tuxtla Gutierrez, Mexico. Felt at Coban, Guatemala City, Quezaltenango and San Marcos, Guatemala. Also felt at Mexico City, Mexico and (II) at San Salvador, El Salvador.
MAR 30	19	55	46.0	28.994	N	52.745	E	54	D	5.5		1.2	291	SOUTHERN IRAN. Mw 5.4 (HRV). Mo=1.6*10**17 Nm (HRV). At least thirty people were injured in the Firuzabad area. Felt in the Shiraz area.
MAR 31	22	40	52.1	22.057	S	179.533	W	580	G	6.1		0.9	491	SOUTH OF FIJI ISLANDS. Mw 6.5 (GS), 6.5 (HRV). Mo=7.2*10**18 Nm (GS). Mo=6.6*10**18 Nm (HRV). Mo=1.1*10**19 Nm (PPT).

DATE	ORIGIN TIME UTC HR MN SEC	GEOGRAPHIC COORDINATES LAT LONG	DEPTH	MAGNITUDES GS MB Msz	SD	NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
APR 13	22 22 29.9	3.136 S 135.968 E	29 D	6.0 6.3	1.1	318	IRIAN JAYA REGION, INDONESIA. Mw 6.3 (GS), 6.5 (HRV). Ms 6.4 (BRK). Mo=3.1*10**18 Nm (GS). Mo=5.8*10**18 Nm (HRV). Mo=1.5*10**19 Nm (PPT). Felt in the Enarotali and Nabire areas.
APR 18	17 29 54.1	6.470 S 154.934 E	26 G	6.6 6.7	1.2	543	SOLOMON ISLANDS. Mw 6.7 (GS), 6.7 (HRV). Ms 6.8 (BRK). Mo=1.4*10**19 Nm (GS). Mo=1.4*10**19 Nm (HRV). Mo=1.0*10**19 Nm (PPT). Felt strongly on Bougainville and (IV) at Rabaul, Papua New Guinea. Felt on Choiseul, Santa Isabel and at Honiara, Solomon Islands. Also felt on New Ireland.
APR 21	03 51 44.5	5.702 S 154.120 E	28 G	5.9 6.6	1.1	285	SOLOMON ISLANDS. Mw 6.7 (GS), 6.7 (HRV). Ms 6.9 (BRK). Mo=1.1*10**19 Nm (GS). Mo=1.2*10**19 Nm (HRV). Mo=1.2*10**19 Nm (PPT). Felt (VI) at Rabaul, Papua New Guinea.
APR 29	07 11 29.6	28.299 S 63.252 W	562 G	6.3	0.9	539	SANTIAGO DEL ESTERO PROV., ARG. Mw 6.9 (GS), 6.9 (HRV). mb 6.0 (BRK). Mo=2.5*10**19 Nm (GS). Mo=2.5*10**19 Nm (HRV). Mo=3.2*10**19 Nm (PPT).
MAY 10	06 36 28.3	28.501 S 63.096 W	601 G	6.4	1.0	601	SANTIAGO DEL ESTERO PROV., ARG. Mw 6.9 (GS), 6.9 (HRV). mb 6.2 (BRK). Mo=2.9*10**19 Nm (GS). Mo=2.8*10**19 Nm (HRV). Mo=3.4*10**19 Nm (PPT). Felt (IV) at La Rioja and (II) at Mendoza. Felt (II) at Arequipa, Peru.
MAY 11	08 18 15.6	2.008 S 99.770 E	21 G	6.0 6.3	1.0	455	SOUTHERN SUMATERA, INDONESIA. Mw 6.5 (GS), 6.4 (HRV). Ms 6.0 (BRK). Mo=5.7*10**18 Nm (GS). Mo=5.3*10**18 Nm (HRV). Minor damage at Padang. Felt in central Sumatera, Singapore and southern Malaysia.
MAY 13	20 12 27.8	7.972 N 123.189 E	33 N	5.6 5.6	1.4	147	MINDANAO, PHILIPPINE ISLANDS. Mw 5.9 (HRV). Mo=8.7*10**17 Nm (HRV). Three people injured and 43 houses damaged in the Pagadian-Cotabato-Cagayan de Oro area.
MAY 24	04 00 42.1	23.959 N 122.448 E	16 G	6.2 6.7	1.2	437	TAIWAN REGION. Mw 6.6 (GS), 6.5 (HRV). Ms 6.3 (BRK). Mo=7.8*10**18 Nm (GS). Mo=6.6*10**18 Nm (HRV). Mo=8.6*10**18 Nm (PPT). Felt (IV JMA) at Su-ao, (III JMA) at Taipei, Chia-i and Hua-lien; (II JMA) at Tai-nan, Tai-chung and Tai-tung. Felt (III JMA) on Yonaguni-jima and Iriomote-jima; (II JMA) on Ishigaki-shima, Ryukyu Islands.
MAY 25	04 03 41.2	4.199 S 135.489 E	33 N	6.0 6.4	1.2	234	IRIAN JAYA REGION, INDONESIA. Mw 6.5 (GS), 6.5 (HRV). Ms 6.6 (BRK). Mo=7.4*10**18 Nm (GS). Mo=5.4*10**18 Nm (HRV). Mo=1.9*10**19 Nm (PPT). Several buildings damaged in the Paniai District. Felt (IV) at Nabire and in the Tembagapura area; (III) at Enarotali and Timika. Landslides occurred in the epicentral area.
MAY 26	08 26 52.4	35.305 N 4.103 W	10 G	5.7 5.8	1.2	416	STRAIT OF GIBRALTAR. Mw 6.0 (GS), 6.0 (HRV). mbLg 5.7 (MDD). Ms 5.5 (BRK). Mo=9.7*10**17 Nm (GS). Mo=1.0*10**18 Nm (HRV). One person injured and several buildings damaged at Al Hoceima, Morocco. Felt at Fes, Meknes, Nador, Sefrou, Tanger, Taza and Tetouan, Morocco.
MAY 29	14 11 50.9	20.556 N 94.160 E	36	6.2 6.2	1.0	564	MYANMAR. Mw 6.4 (GS), 6.5 (HRV). Ms 5.9 (BRK). Mo=4.2*10**18 Nm (GS). Mo=6.5*10**18 Nm (HRV). Mo=4.8*10**18 Nm (PPT). Felt at Chiang Mai, Thailand.
MAY 31	17 41 55.5	7.414 N 72.033 W	12 G	6.3 5.6	0.9	487	NORTHERN COLOMBIA. Mw 5.9 (GS), 6.0 (HRV). Ms 5.4 (BRK). Mo=9.1*10**17 Nm (GS). Mo=1.2*10**18 Nm (HRV). Mo=3.9*10**18 Nm (PPT). One person injured and some damage in the epicentral region. Felt throughout much of northern Colombia. Felt at Arauca, Bogota, Bucaramanga, Cucuta, Ibaque, Manizales, Tunja, Sincelejo, Sogamoso and Villavicencio. Also felt at Caracas, Venezuela.
JUN 02	18 17 34.0	10.477 S 112.835 E	18	5.7 7.2	1.1	139	SOUTH OF JAWA, INDONESIA. Mw 7.8 (GS), 7.8 (HRV). Ms 6.8 (BRK). Mo=5.2*10**20 Nm (GS). Mo=5.3*10**20 Nm (HRV). Mo=2.5*10**20 Nm (PPT). At least 250 people killed, 27 missing, 423 injured and many left homeless. About 1,500 houses damaged or destroyed and 278 boats sunk or damaged. Most of the casualties and damage were caused by a tsunami along the southeast coast of Jawa. Tsunami runup of 500 meters occurred in some places. The quake was felt strongly across Bali, central and eastern Jawa, Lombok and Sumbawa Islands.
JUN 03	21 06 59.8	10.362 S 112.892 E	26 G	6.1 6.4	1.2	332	SOUTH OF JAWA, INDONESIA. Mw 6.3 (GS), 6.6 (HRV). Ms 6.3 (BRK). Mo=3.4*10**18 Nm (GS). Mo=8.8*10**18 Nm (HRV). Mo=1.6*10**19 Nm (PPT).
JUN 04	00 57 50.6	10.777 S 113.366 E	11 G	6.0 6.3	1.2	295	SOUTH OF JAWA, INDONESIA. Mw 6.2 (GS), 6.5 (HRV). Ms 6.0 (BRK). Mo=2.1*10**18 Nm (GS). Mo=5.8*10**18 Nm (HRV). Mo=1.2*10**19 Nm (PPT).

DATE	ORIGIN TIME			GEOGRAPHIC		DEPTH	MAGNITUDES SD			NO.	REGION,	CONTRIBUTED	MAGNITUDES	AND	COMMENTS
	UTC	HR	MN	SEC	LAT		LONG	GS	MB						
JUN 05	01	09	30.1	24.511	N	121.905	E	11	G	6.1	6.6	1.2	421	TAIWAN. Mw 6.4 (GS), 6.4 (HRV). Ms 6.1 (BRK). Mo=3.9*10**18 Nm (GS). Mo=3.8*10**18 Nm (HRV). Mo=5.2*10**18 Nm (PPT). One person killed at Chi-lung; two injured in the I-lan-Tai-pei area. Two-thirds of the houses were damaged in the Nan-ao area. Surface cracks were also observed in the area. Landslides blocked a highway between Su-ao and Hua-lien. Felt (V JMA) at Nan-ao; (IV JMA) at Hua-lien, Su-ao and Tai-pei; (III JMA) at Chia-i and Hsin-chu; (II JMA) at Tai-chung and Tai-nan. Also felt on Iriomote-jima, Ishigaki-shima and Yonaguni-jima, Japan.	
JUN 06	20	47	40.5	2.917	N	76.057	W	12	G	6.4	6.6	1.1	582	COLOMBIA. Mw 6.7 (GS), 6.8 (HRV). Ms 6.3 (BRK). Mo=1.3*10**19 Nm (GS). Mo=1.8*10**19 Nm (HRV). Mo=4.7*10**19 Nm (PPT). At least 295 people killed, 500 missing, 13,000 homeless and severe damage caused to houses, highways and bridges by the earthquake and ensuing landslides in Cauca, Huila, Tolima and Valle Departments. At least 200 homes were destroyed, including 25 at Toribio and 15 at Piendamó. Moderate structural damage occurred at Bogota and Cali. An avalanche from the Huila Volcano blocked the Paéz River causing severe flooding at Belalcazar and Neiva. Felt in much of west-central Colombia from Tunja to Pasto.	
JUN 09	00	33	16.2	13.841	S	67.553	W	631	G	7.0		1.1	676	NORTHERN BOLIVIA. Mw 8.2 (GS), 8.2 (HRV). mb 7.4 (BRK). Mo=2.0*10**21 Nm (GS). Mo=2.6*10**21 Nm (HRV). Mo=8.5*10**20 Nm (PPT). Unconfirmed reports of five people killed in Peru; three in Arequipa Province by a landslide collapsing their house and two in Cuzco Province; one by falling debris and another by a heart attack. Numerous injuries and landslides occurred in southern Peru. Damage (VI) at La Paz. In Cochabamba, La Paz and Oruro, a large number of windows broke in tall buildings, and some structural damage occurred. Some minor structural damage also occurred at Brasilia, Campo Grande, Porto Velho and Manaus, Brazil; Arica, Chile and Tacna, Peru. Felt in many parts of South America, including most of Argentina, Bolivia and Brazil. Felt lightly in Uruguay. Felt (IV) at Arequipa, Moquegua, Puno and Tacna; (III) at Moyobamba, Rioja and Tarapoto, Peru. Felt (IV) at Arica, (III) at Iquique, (II) at Copiapo and (I) at Santiago, Chile. Felt (IV) at Guayaquil and (III) at Quito, Ecuador. Felt on Puerto Rico and in the Dominican Republic. Felt at many locations in North America, including Los Angeles, California; Renton, Washington; Omaha, Nebraska; Sioux City, Iowa; Minneapolis, Minnesota; La Crosse, Wisconsin; Chicago, Illinois; Parkersburg, West Virginia; Norwich, Connecticut; Boston, Massachusetts and Toronto, Canada. This is the first earthquake from this part of South America believed to have been felt in North America and is also believed to be the largest ever recorded in this general area.	
JUN 10	06	25	57.8	41.527	N	88.710	E	0	G	5.8		0.9	388	SOUTHERN XINJIANG, CHINA. Probable underground nuclear explosion.	
JUN 18	03	25	15.8	42.963	S	171.658	E	14	G	6.2	7.1	1.3	339	SOUTH ISLAND, NEW ZEALAND. Mw 6.7 (GS), 6.8 (HRV). Ms 7.1 (BRK). ML 6.5 (WEL). Mo=2.0*10**19 Nm (PPT). Mo=1.3*10**19 Nm (GS). Mo=1.5*10**19 Nm (HRV). Some structural damage (VI) at Christchurch. Landslides blocked Highway 73 between Arthur's Pass and Christchurch. Felt throughout South Island and the southern part of North Island.	
JUN 20	09	09	02.9	28.968	N	52.614	E	9	G	5.9	5.7	1.1	468	SOUTHERN IRAN. Mw 5.8 (GS), 5.9 (HRV). Ms 5.9 (BRK). MD 5.8 (RYD). Mo=5.9*10**17 Nm (GS). Mo=8.1*10**17 Nm (HRV). At least three people killed and 100 injured in the Firuzabad-Shiraz area. Twelve villages destroyed and 50 others severely damaged in the Firuzabad-Shiraz area. Landslides blocked a road in the Zagros Mountains. Felt at Jahrom.	
JUL 04	21	36	41.9	14.888	N	97.322	W	15	G	6.1	6.1	1.0	442	OFF COAST OF OAXACA, MEXICO. Mw 6.0 (GS), 6.5 (HRV). Mo=1.3*10**18 Nm (GS). Mo=5.4*10**18 Nm (HRV). Mo=1.5*10**19 Nm (PPT). Two people were killed in the city of Oaxaca by a stone wall that fell during the earthquake and several people were injured. Felt in the states of Guerrero, Oaxaca, Puebla and Veracruz. Also felt at Mexico City.	
JUL 13	02	35	56.0	16.620	S	167.518	E	33	N	6.4	7.3	1.3	390	VANUATU ISLANDS. Mw 7.1 (GS), 7.2 (HRV). Ms 7.3 (BRK). Mo=5.1*10**19 Nm (GS). Mo=6.6*10**19 Nm (HRV). Mo=1.0*10**20 Nm (PPT). Felt (VI) at Port-Vila and (V) at Malakula. Also felt on Ambrym, Aoba, Efate, Epi, Erromango, Espiritu Santo, Maewo and Pentecost.	
JUL 13	03	13	19.3	16.812	S	167.249	E	33	N	6.1		1.3	341	VANUATU ISLANDS. Mw 6.7 (HRV). Mo=1.1*10**19 Nm (HRV).	
JUL 13	11	45	23.3	7.532	S	127.770	E	159	G	6.5		1.1	679	BANDA SEA. Mw 6.4 (GS), 6.5 (HRV). mb 6.8 (BRK). Mo=5.3*10**18 Nm (GS). Mo=6.1*10**18 Nm (HRV). Mo=9.0*10**18 Nm (PPT).	
JUL 21	18	36	31.7	42.340	N	132.865	E	471	G	6.5		0.9	833	NEAR SOUTHEAST COAST OF RUSSIA. Mw 7.3 (GS), 7.3 (HRV). mb 6.6 (BRK). Mo=9.0*10**19 Nm (GS). Mo=1.1*10**20 Nm (HRV). Mo=5.4*10**19 Nm (PPT). Felt (III JMA) at Onahama and Tokyo; (II JMA) at Aomori, Sapporo, and Yokohama; (I JMA) at Tottori, Japan.	
JUL 24	17	55	40.3	16.966	S	167.574	E	21	D	5.9	6.5	1.3	334	VANUATU ISLANDS. Mw 6.3 (GS), 6.4 (HRV). Ms 6.6 (BRK). Mo=3.3*10**18 Nm (GS). Mo=4.0*10**18 Nm (HRV). Mo=2.7*10**18 Nm (PPT).	
JUL 25	22	00	22.9	56.362	S	27.365	W	81	G	6.3		1.2	287	SOUTH SANDWICH ISLANDS REGION. Mw 6.6 (GS). Mo=8.4*10**18 Nm (GS).	

DATE	ORIGIN TIME UTC HR MN SEC	GEOGRAPHIC COORDINATES LAT LONG	DEPTH	MAGNITUDES GS MB Msz	SD	NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
AUG 06	11 03 51.8	32.956 S 151.228 E	10 G	5.3	0.9	70	NEAR S.E. COAST OF AUSTRALIA. ML 5.4 (CNB). Considerable damage (VII) in the Cessnock area. Some structural damage (VI) at Newcastle. Felt (V) at Gosford and Wyong; (IV) at Forster and Taree; (III) at Albury, Narrabri, Sydney and Wodonga. Also felt at Canberra, Orange, Wollongong, and as far away as Alice Springs.
AUG 18	01 13 05.7	35.520 N 0.106 W	9 G	5.7 5.9	1.2	492	NORTHERN ALGERIA. Mw 5.9 (HRV). MD 5.4 (STR). mbLg 5.2 (MDD). Mo=6.9*10**17 Nm (HRV). At least 159 people were killed, 289 injured, 8,000 to 10,000 left homeless and thousands of houses destroyed in Mascara Province.
AUG 18	04 42 57.3	44.767 N 150.158 E	15 G	6.2 6.5	1.1	602	EAST OF KURIL ISLANDS. Mw 6.4 (GS), 6.6 (HRV). Ms 6.0 (BRK). Mo=4.7*10**18 Nm (GS). Mo=7.6*10**18 Nm (HRV). Mo=7.7*10**18 Nm (PPT).
AUG 19	10 02 51.8	26.642 S 63.421 W	564 G	6.4	0.9	615	SANTIAGO DEL ESTERO PROV., ARG. Mw 6.5 (GS), 6.5 (HRV). mb 6.0 (BRK). Mo=5.4*10**18 Nm (GS). Mo=5.6*10**18 Nm (HRV). Mo=8.5*10**18 Nm (PPT). Felt at Antofagasta, Chile.
AUG 28	18 37 20.6	44.783 N 150.061 E	19 G	6.1 6.6	1.2	502	EAST OF KURIL ISLANDS. Mw 6.6 (GS), 6.6 (HRV). Ms 6.3 (BRK). Mo=7.9*10**18 Nm (GS). Mo=8.4*10**18 Nm (HRV). Mo=3.4*10**19 Nm (OBN). Mo=1.2*10**19 Nm (PPT). Felt (IV) at Reydovoye.
SEP 01	07 11 53.4	26.447 S 27.405 E	5 G		0.9	7	REPUBLIC OF SOUTH AFRICA. ML 2.7 (PRE). Three people killed and 13 injured at the Vaal Reefs gold mine.
SEP 01	15 15 53.0	40.402 N 125.680 W	10 G	6.6 7.0	1.0	624	OFF COAST OF NORTHERN CALIFORNIA. Mw 7.1 (GS), 7.0 (HRV), 6.9 (BRK). ML 6.8 (BRK). Mo=4.4*10**19 Nm (GS). Mo=3.9*10**19 Nm (HRV). Mo=5.4*10**19 Nm (PPT). Slight damage (VI) at Honeydew. Felt (V) at Arcata, Bayside, Blocksburg, Bridgeville, Comptche, Dos Rios, Douglas City, Eureka, Ferndale, Fields Landing, Fortuna, Garberville, Junction City, Lakehead, Manchester, Manila, McKinleyville, Mendocino, Miranda, Myers Flat, Petrolia, Phillipsville, Piercy, Project City, Rio Dell, Samoa, Westport, Whitethorn and Zenia. Felt in much of northern California as far south as Fresno. Also felt in parts of southern Oregon. Tsunami generated with maximum wave height of 14 cm. (peak-to-trough) at Crescent City.
SEP 01	16 12 40.7	41.183 N 21.196 E	14	5.8	1.2	441	NORTHWESTERN BALKAN REGION. ML 5.6 (TTG), 5.4 (ROM), 5.2 (SKO). MD 5.4 (ATH). Many people injured and some damage in the Bitola area. Felt (VII) in the Bitola-Ohrid area; (V) at Prilep; (III) at Gevgelija and Titov Veles. Felt strongly at Florina and Kastoria, Greece. Also felt in southwestern Bulgaria.
SEP 16	06 20 18.7	22.528 N 118.711 E	13 G	6.5 6.7	1.2	525	TAIWAN REGION. Mw 6.8 (GS), 6.7 (HRV). Mo=1.5*10**19 Nm (GS). Mo=1.2*10**19 Nm (HRV). Mo=8.6*10**18 Nm (PPT). One person killed, at least 400 people injured and structural damage in Fujian and Guangdong Provinces, China. Some houses damaged and ground cracks (IV JMA) observed on Peng-hu, Taiwan. Felt (III JMA) at Chia-i, Kao-hsiung and Tai-nan; (II JMA) at Heng-chun, Hua-lien, Tai-chung and Tai-pei, Taiwan. Felt (V) at Hong Kong. Also felt at Nanjing and Wuhan, China.
OCT 01	16 35 20.7	17.745 S 167.682 E	17 G	5.9 6.5	1.1	378	VANUATU ISLANDS. Mw 6.4 (GS), 6.5 (HRV). Ms 6.5 (BRK). Mo=4.6*10**18 Nm (GS). Mo=6.8*10**18 Nm (HRV). Mo=9.9*10**18 Nm (PPT).
OCT 04	13 22 55.8	43.773 N 147.321 E	14	7.3 8.1	0.9	672	KURIL ISLANDS. Mw 8.2 (GS), 8.3 (HRV). Ms 7.9 (BRK). Mo=2.0*10**21 Nm (GS). Mo=3.0*10**21 Nm (HRV). Mo=2.1*10**21 Nm (OBN). Mo=2.0*10**21 Nm (PPT). At least 10 people killed or missing, many injured and damage on Iturup. Considerable damage (IX) on Shikotan from the earthquake and tsunami. Damage also occurred on Kunashir. Felt (IV) at Kurilsk; (III) at Severo-Kurilsk and on Matua; (II) on Simushir. One person died from a heart attack, at least 200 people were injured and extensive damage and landslides occurred along the eastern coast of Hokkaido. Felt strongly in northern Honshu and as far south as the Tokyo area. Tsunami wave heights from selected tide stations (peak-to-trough) were as follows: 346 cm. at Hanasaki, 164 cm. at Kushiro, 26 cm. at Abashiri, Hokkaido; 144 cm. at Miyako, 130 cm. at Hachinohe, 92 cm. at Ofunato, 62 cm. at Onahama, 46 cm. at Omae-zaki, 42 cm. at Choshi, Honshu; 162 cm. on Chichi-shima; 300 cm. at Yuzhno-Kurilsk, Kunashir Island, 15 cm. on Shemya, 16 cm. at Pago Pago, American Samoa, 17 cm. on Wake Island, 50 cm. on Midway Island and 48 cm. at Hilo, Hawaii.
OCT 07	03 25 58.1	41.662 N 88.753 E	0 G	6.0	0.9	456	SOUTHERN XINJIANG, CHINA. Probable underground nuclear explosion.
OCT 08	21 44 07.2	1.258 S 127.980 E	17 G	6.4 6.8	1.2	260	HALMAHERA, INDONESIA. Mw 6.8 (GS), 6.8 (HRV). Ms 6.8 (BRK). Mo=1.9*10**19 Nm (GS). Mo=1.7*10**19 Nm (HRV). Mo=4.2*10**19 Nm (PPT). One person killed, 52 injured and nearly 500 buildings damaged on Obi. Also, some bridges and piers were damaged on Obi. Felt strongly on Ambon.
OCT 09	07 55 39.5	43.905 N 147.916 E	33 N	6.5 7.1	0.9	644	KURIL ISLANDS. Mw 7.1 (GS), 7.3 (HRV). Ms 6.7 (BRK). Mo=5.8*10**19 Nm (GS). Mo=9.4*10**19 Nm (HRV). Mo=1.2*10**20 Nm (PPT). Felt (VI) on Iturup. Felt (IV JMA) in the Kushiro area, Hokkaido. Tsunami wave heights (peak-to-trough) from tide stations were 18 cm. at Hanasaki and 6 cm. at Kushiro, Hokkaido.

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DATE	ORIGIN TIME UTC HR MN SEC	GEOGRAPHIC COORDINATES LAT LONG	DEPTH	MAGNITUDES GS MB Msz	SD	NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
OCT 13	05 04 24.9	1.212 S 127.912 E	11 G	6.1 6.3	1.3	269	HALMAHERA, INDONESIA. Mw 6.4 (GS), 6.4 (HRV). Mo=4.6*10**18 Nm (GS). Mo=5.1*10**18 Nm (HRV). Mo=1.2*10**19 Nm (PPT). Nineteen people injured and damage on Obi.
OCT 16	05 10 00.9	45.749 N 149.167 E	117 G	6.4	0.9	665	KURIL ISLANDS. Mw 6.7 (GS), 6.7 (HRV). mb 6.8 (BRK). Mo=1.3*10**19 Nm (GS). Mo=1.4*10**19 Nm (HRV). Mo=4.5*10**18 Nm (PPT). Felt (V) at Kurilsk and (IV) at Yuzhno-Kurilsk.
NOV 05	02 16 03.3	57.193 S 157.858 E	25 G	6.1 6.1	1.2	202	MACQUARIE ISLANDS REGION. Mw 6.5 (GS), 6.3 (HRV). Mo=6.9*10**18 Nm (GS). Mo=3.6*10**18 Nm (HRV). Mo=4.9*10**18 Nm (PPT).
NOV 14	19 15 30.6	13.525 N 121.067 E	32 G	6.1 7.1	1.1	411	MINDORO, PHILIPPINE ISLANDS. Mw 7.0 (GS), 7.1 (HRV). Ms 7.1 (BRK). Mo=3.2*10**19 Nm (GS). Mo=5.1*10**19 Nm (HRV). Mo=2.0*10**20 Nm (PPT). At least seventy-eight people killed and 225 injured on Luzon and Mindoro. A local tsunami contributed to extensive damage (VII RF) in the Calapan and Puerto Galera areas. More than 797 houses destroyed and 3,288 damaged on Mindoro. Seven houses destroyed at Batangas, Luzon. Liquefaction, sand boils and surface faulting occurred in the epicentral area. Felt (IV RF) at Batangas, Guinayangan, Manila and Tagaytay; (III RF) at Quezon City, Luzon. Also felt (II RF) on Masbate.
NOV 15	20 18 11.3	5.589 S 110.186 E	561 G	6.2	0.9	672	JAVA SEA. Mw 6.5 (GS), 6.5 (HRV). Mo=6.6*10**18 Nm (GS). Mo=6.4*10**18 Nm (HRV).
NOV 20	16 59 05.6	2.001 S 135.932 E	16 G	5.8 6.3	1.1	193	IRIAN JAYA REGION, INDONESIA. Mw 6.3 (GS), 6.3 (HRV). Ms 6.2 (BRK). Mo=3.6*10**18 Nm (GS). Mo=3.5*10**18 Nm (HRV). Mo=9.5*10**18 Nm (PPT). Twenty-eight people injured and many buildings damaged at Serui, Yapen. Felt strongly on Yapen. Also felt on Biak.
DEC 10	16 17 38.5	18.136 N 101.384 W	48 G	6.6 6.2	1.1	554	GUERRERO, MEXICO. Mw 6.5 (GS), 6.4 (HRV). Ms 5.7 (BRK). Mo=5.7*10**18 Nm (GS). Mo=5.2*10**18 Nm (HRV). Mo=1.2*10**19 Nm (PPT). Some damage at Mexico City and Zihuatanejo.
DEC 15	11 20 22.1	37.282 S 177.523 E	33 N	5.9 6.4	1.3	94	OFF E. COAST OF N. ISLAND, N.Z. Mw 6.5 (GS), 6.3 (HRV). ML 6.2 (WEL). Ms 6.4 (BRK). Mo=6.2*10**18 Nm (GS). Mo=3.3*10**18 Nm (HRV). Mo=9.3*10**18 Nm (PPT). Minor damage occurred at Opotiki. Felt strongly in the Bay of Plenty region. Felt in the northern and central parts of North Island.
DEC 28	12 19 23.0	40.525 N 143.419 E	27 G	6.4 7.5	1.1	470	OFF EAST COAST OF HONSHU, JAPAN. Mw 7.7 (GS), 7.8 (HRV). Ms 7.2 (BRK). Mo=4.3*10**20 Nm (GS). Mo=4.9*10**20 Nm (HRV). Mo=2.7*10**20 Nm (OBN). Mo=3.4*10**20 Nm (PPT). Three people killed, more than 200 injured and damage (VI JMA) in the Hachinohe area. Felt (V JMA) at Aomori, Morioka and Mutsu; (IV JMA) at Miyako and Ofunato; (III JMA) at Sendai. Felt (VI) at Misawa. Also felt (IV JMA) at Hakodate, Obihiro, Tomakomai and Urakawa; (III JMA) at Sapporo, Hokkaido. Felt as far away as Tokyo. Local tsunami generated with maximum wave heights (peak- to-trough) recorded at the following selected tide stations: 110 cm. at Miyako, 88 cm. at Hachinohe, 54 cm. at Ofunato, 10 cm. at Choshi, Honshu; 48 cm. at Urakawa, 36 cm. at Hakodate and Kushiro, Hokkaido.
DEC 30	06 56 16.8	38.179 N 39.670 E	10 G	4.7	1.5	36	TURKEY. Two people injured and some buildings slightly damaged in the Diyarbakir area.
DEC 31	02 57 20.8	20.524 N 109.330 E	33 N	5.7 5.3	0.9	181	SOUTHEASTERN CHINA. Mw 5.3 (HRV). Mo=1.1*10**17 Nm (HRV). At least 360 people injured in Guangdong and Guangxi Provinces and more than 1,100 houses damaged in Guangxi Province. Felt at Beihai, Guangzhou, Haikou, Nanning, Sanya and Zhanjiang. Also felt at Hong Kong.
----- OTHER NOTABLE NORTH AMERICAN EARTHQUAKES IN 1994 -----							
JAN 16	00 42 43.2	40.327 N 76.007 W	5 G	4.2	0.8	24	PENNSYLVANIA. mbLg 4.0 (GS). Slight damage in the Reading area. Felt north as far as Allentown and south to Chester County.
JAN 16	01 49 16.2	40.330 N 76.037 W	5 G	4.6	0.9	53	PENNSYLVANIA. mbLg 4.6 (GS). Some damage in the Reading area. Felt (V) at Fleetwood, Hamburg and Wernersville; (IV) at Auburn, Bechtelsville, Bernville, Blue Ball, Conestoga, Denver, Douglassville, Ephrata, Exton, Gap, Honey Brook, Leola, Myerstown, Newmanstown, Orwigsburg, Parkesburg, Pequea, Pine Grove, Richland, Schaefferstown, Shoemakersville, Silver Spring, Temple and Willow Street. Felt throughout southeastern Pennsylvania and as far as Baltimore, Maryland and New York City. Also felt at Toronto, Canada.
JAN 29	11 20 35.9&	34.305 N 118.579 W	1	4.9 5.3		187	SOUTHERN CALIFORNIA. <PAS-P>. ML 5.1 (PAS), 5.4 (BRK). Additional damage in the Northridge area. Slight damage (VI) at Camarillo and Sunland. Felt (V) at Burbank, Chatsworth, Glendale, Montrose, North Hollywood, Ojai, Paramount, Sun Valley, Thousand Oaks, Tujunga, Ventura and Yorba Linda. Felt in Kern, Los Angeles, Orange, Riverside, Santa Barbara and Ventura Counties.

1994

DATE	ORIGIN TIME UTC HR MN SEC	GEOGRAPHIC COORDINATES LAT LONG	DEPTH	MAGNITUDES GS MB Msz	SD	NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
FEB 03	09 05 04.2	42.762 N 110.976 W	8 G	5.4 5.5	0.9	279	WYOMING. Mw 5.6 (GS), 5.8 (HRV). ML 5.8 (GS). Mo=1.0*10**18 Nm (BRK). Mo=2.9*10**17 Nm (GS). Mo=5.6*10**17 Nm (HRV). Some damage (VII) in the Afton-Auburn, Wyoming area and slight damage (VI) at Fairview, Wyoming. Felt (V) at Alpine, Bedford, Etna, Grover, Kemmerer and Smoot; (IV) at Big Piney, La Barge and Thayne, Wyoming. Also felt at Dubois, Evanston, Green River, Jackson and Rock Springs, Wyoming. Felt (V) at Bancroft, Bern, Dingle, Franklin, Geneva, Georgetown, Montpelier, Paris and Wayan; (IV) at Bloomington, Downey, Grace, Lava Hot Springs and Soda Springs; (III) at Idaho Falls and Pocatello, Idaho. Felt at Moab, Price, Sandy, Salt Lake City and Vernal, Utah. Also felt at Grand Junction and Hotchkiss, Colorado.
FEB 11	14 59 50.5	42.764 N 110.995 W	5 G	4.8	1.0	154	WYOMING. ML 5.3 (GS), 5.1 (BUT). Minor damage (VI) in the Afton-Auburn-Grover, Wyoming area. Felt (V) at Bedford and Smoot; (IV) at Etna, Fairview and Freedom; (III) at Thayne; (II) at Kemmerer, Wyoming. Also felt at Green River and Rock Springs, Wyoming. Felt (V) at Montpelier; (IV) at Bloomington, Dingle, Geneva, Georgetown, Irwin and Paris; (III) at Downey and Lava Hot Springs, Idaho. Felt (III) at Clearfield and Ogden, Utah. Also felt at Salt Lake City, Utah.
MAR 20	21 20 12.2&	34.231 N 118.475 W	13	5.2 4.8		232	SOUTHERN CALIFORNIA. <PAS-P>. Mw 5.3 (HRV). ML 5.3 (PAS), 5.3 (BRK). Mo=1.2*10**17 Nm (BRK). Mo=1.1*10**17 Nm (HRV). Minor damage (VI) at Burbank and in the San Fernando area. Felt (V) at Agoura Hills, Glendale, Huntington Park, La Crescenta, Los Alamitos, Monterey Park, Northridge, Oxnard, Paramount, Port Hueneme, Reseda, Santa Barbara, Santa Clarita, Sierra Madre, Sunland, Sun Valley, Tarzana, Topanga, Tujunga, Van Nuys, Westminster, Whittier and Woodland Hills. Felt in Los Angeles, Orange, San Bernardino, San Diego, Santa Barbara and Ventura Counties.
SEP 12	12 23 43.2&	38.819 N 119.652 W	14	5.4 5.7		347	CALIFORNIA-NEVADA BORDER REGION. <GM-P>. Mw 6.1 (GS), 5.9 (HRV). MD 6.0 (GM). ML 6.0 (BRK), 6.0 (GS). Mo=7.1*10**17 Nm (BRK). Mo=1.4*10**18 Nm (GS). Mo=8.4*10**17 Nm (HRV). Slight damage (VI) at Gardnerville, Minden, Smith and Virginia City, Nevada. Also slight damage (VI) at Garden Valley, Kirkwood and Markleeville, California. Felt (V) in many areas of northern California and western Nevada including Placerville, Sacramento, South Lake Tahoe and Stockton, California as well as Fallon, Fernley, Reno, Washoe City and Wellington, Nevada. Felt as far as San Francisco and Fresno, California.
SEP 13	06 01 23.0	38.151 N 107.976 W	10 G	4.4	1.0	66	COLORADO. ML 4.6 (GS). Slight damage (VI) at Norwood. Felt strongly at Montrose. Felt (V) at Ophir, Placerville, Ridgway and Telluride; (IV) at Nucla, Olathe, Ouray, Redvale and Silverton; (III) at Cimarron, Crawford, Hotchkiss, Naturita, Paonia and Rico; (II) at Austin and Somerset. Felt as far as Grand Junction, Colorado and Moab, Utah.
OCT 27	17 45 58.0	43.515 N 127.427 W	20 G	5.6 6.0	1.2	239	OFF COAST OF OREGON. Mw 6.3 (GS), 6.3 (HRV). Mo=3.2*10**18 Nm (BRK). Mo=3.3*10**18 Nm (GS). Mo=3.5*10**18 Nm (HRV).
DEC 26	14 10 29.1&	40.741 N 124.310 W	23	5.1 5.0		170	NEAR COAST OF NORTHERN CALIF. <GM-P>. Mw 5.5 (HRV). MD 5.3 (GM). ML 5.3 (BRK). Mo=1.5*10**17 Nm (BRK). Mo=2.1*10**17 Nm (HRV). Some damage (VII) at Eureka and Samoa. Slight damage (VI) at Arcata, Blue Lake, Fields Landing, Fortuna and McKinleyville. Total damage in Humboldt County estimated at 2.1 million U.S. dollars. Felt (V) at Bridgeville, Kneeland, Rio Dell and Weott; (IV) at Carlotta, Garberville, Klamath, Korbel, Miranda, Orleans, Petrolia, Phillippsville, Piercy, Redcrest, Salyer and Trinidad. Felt in much of northern California and as far as Brookings and Grants Pass, Oregon.

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JAN 01	06 59 55.9	40.701 N 143.549 E	15 G	5.8 6.2	1.1	377	OFF EAST COAST OF HONSHU, JAPAN. Mw 6.5 (GS), 6.4 (HRV). Ms 5.9 (BRK). Mo=6.2*10**18 Nm (GS). Mo=5.3*10**18 Nm (HRV). Mo=3.4*10**18 Nm (PPT). Felt (II JMA) in the Hachinohe area.
JAN 06	22 37 34.3	40.246 N 142.175 E	27 G	6.7 6.9	0.9	611	NEAR EAST COAST OF HONSHU, JAPAN. Mw 6.9 (GS), 7.0 (HRV). Ms 6.6 (BRK). Mo=2.7*10**19 Nm (GS). Mo=3.3*10**19 Nm (HRV). Mo=5.0*10**19 Nm (PPT). Mo=1.0*10**20 Nm (OBN). At least 29 people injured in Aomori and Iwate Prefectures and about 5,000 homes lost water and sewer services in the region. Felt (V JMA) at Hachinohe and Morioka; (IV JMA) at Aomori, Miyako, Mutsu and Ofunato; (III JMA) at Akita and Sendai. Felt (V) at Misawa and as far south as Tokyo. Also felt (III JMA) at Kushiro, Obihiro, Otaru and Tomakomai, Hokkaido.
JAN 16	20 46 52.1	34.583 N 135.018 E	22 G	6.3 6.8	1.0	503	NEAR S. COAST OF WESTERN HONSHU. Mw 6.8 (GS), 6.9 (HRV). Ms 6.5 (BRK). Mo=1.8*10**19 Nm (GS). Mo=2.4*10**19 Nm (HRV). Mo=6.3*10**19 Nm (PPT). Five thousand five hundred two people confirmed killed, 36,896 injured and extensive damage (VII JMA) in the Kobe area and on Awaji-shima. Over 90 percent of the casualties occurred along the southern coast of Honshu between Kobe and Nishinomiya. At least 28 people were killed by a landslide at Nishinomiya. About 310,000 people were evacuated to temporary shelters. Over 200,000 buildings were damaged or destroyed. Numerous fires, gas and water main breaks and power outages occurred in the epicentral area. Felt (VII JMA) along a coastal strip extending from Suma Ward, Kobe to Nishinomiya and in the Ichinomiya area on Awaji-shima; (V JMA) at Hikone, Kyoto and Toyooka; (IV JMA) at Nara, Okayama, Osaka and Wakayama; (V) at Iwakuni. Also felt (IV JMA) at Takamatsu, Shikoku. Right-lateral surface faulting was observed for 9 kilometers with horizontal displacement of 1.2 to 1.5 meters in the northern part of Awaji-shima. Liquefaction also occurred in the epicentral area.

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DATE	ORIGIN TIME UTC HR MN SEC	GEOGRAPHIC COORDINATES LAT LONG		DEPTH	MAGNITUDES GS MB Msz	SD	NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
JAN 19	15 05 03.4	5.050 N	72.916 W	17 G	6.3 6.6	0.9	607	COLOMBIA. Mw 6.5 (GS), 6.5 (HRV). Ms 6.5 (BRK). Mo=6.9*10**18 Nm (GS). Mo=7.1*10**18 Nm (HRV). Mo=8.8*10**18 Nm (PPT). Five people killed, several injured and at least 20 major buildings damaged in the Bogota area. One person also killed at Manizales and another at Miraflores. More than 500 houses damaged or destroyed in Boyaca Department and 12 others destroyed in Casanare Department. Landslides blocked several rivers and streams in Colombia. Felt in much of Colombia and western Venezuela and as far as Caracas, Venezuela.
JAN 21	08 47 29.6	43.377 N	146.720 E	59 G	6.5 5.9	0.8	621	KURIL ISLANDS. Mw 6.2 (GS), 6.3 (HRV). mb 6.6 (BRK). Mo=2.6*10**18 Nm (GS). Mo=2.8*10**18 Nm (HRV). Mo=3.4*10**18 Nm (PPT), 2.0*10**19 Nm (OBN). Felt (VI) on Shikotan and at Yuzhno-Kurilsk, Kunashir. Felt (IV JMA) at Kushiro and (III JMA) at Nemuro, Hokkaido.
JAN 24	04 14 26.3	27.560 N	55.630 E	33 N	4.9	1.0	100	SOUTHERN IRAN. Mw 5.0 (HRV). MD 4.6 (RYD). Mo=3.1*10**16 Nm (HRV). Eleven people injured and some damage in the Bandar-e Abbas area.
JAN 27	20 16 52.1	4.434 S	134.476 E	22 G	6.2 6.8	1.2	196	IRIAN JAYA REGION, INDONESIA. Mw 6.7 (GS), 6.8 (HRV). Ms 6.7 (BRK). Mo=1.3*10**19 Nm (GS). Mo=1.8*10**19 Nm (HRV). Mo=5.3*10**19 Nm (PPT).
FEB 03	15 26 10.6	41.529 N	109.640 W	1 G	5.3 4.6	1.0	322	WYOMING. Probable implosion in a trona mine west of Green River. One miner killed and ten injured. Slight damage at Green River and Little America. Felt (V) at Rock Springs; (III) at Eden and Reliance. Also felt at Ogden and Salt Lake City, Utah. Up to one meter of surface subsidence occurred in about a 1 by 2 km area above the mine.
FEB 05	22 51 05.1	37.759 S	178.752 E	21 G	6.5 7.5	1.0	566	OFF E. COAST OF N. ISLAND, N.Z. Mw 7.0 (GS), 7.1 (HRV). Ms 7.5 (BRK). Mo=3.1*10**19 Nm (GS). Mo=5.8*10**19 Nm (HRV). Mo=4.0*10**19 Nm (PPT). Felt over much of the North Island and as far south as Christchurch on the South Island. Also felt on the Chatham Islands.
FEB 08	18 40 25.3	4.104 N	76.622 W	74 G	6.3	0.9	568	COLOMBIA. Mw 6.4 (GS), 6.4 (HRV). MD 6.0 (UPA). Mo=4.2*10**18 Nm (GS). Mo=4.1*10**18 Nm (HRV). Mo=3.5*10**18 Nm (PPT). Forty-two people killed, nearly 400 injured and over 2,000 buildings damaged or destroyed in the Cali-Pereira area. Landslides blocked two roads in the epicentral area. Damage occurred at Armenia, Calarca, Cali, La Union, Manizales, Pereira, Trujillo and in many other areas of western Colombia. Felt throughout Colombia.
FEB 10	01 45 03.9	37.855 S	178.602 E	28 G	5.8 6.4	1.2	223	OFF E. COAST OF N. ISLAND, N.Z. Mw 6.3 (GS), 6.5 (HRV). ML 6.3 (WEL). Mo=3.7*10**18 Nm (GS). Mo=6.1*10**18 Nm (HRV). Mo=1.1*10**19 Nm (PPT). Felt on much of the North Island including Auckland, Bay of Plenty, East Cape and Wellington.
FEB 13	15 04 24.0	1.318 S	127.438 E	14 G	6.3 6.7	1.2	348	HALMAHERA, INDONESIA. Mw 6.7 (GS), 6.7 (HRV). Ms 6.8 (BRK). Mo=1.1*10**19 Nm (GS). Mo=1.2*10**19 Nm (HRV). Mo=3.3*10**19 Nm (PPT). Felt (V) on Obi, (IV) at Labuha and (III) at Ternate.
FEB 19	04 03 16.1	40.556 N	125.539 W	10 G	6.0 6.8	1.1	527	OFF COAST OF NORTHERN CALIFORNIA. Mw 6.4 (GS), 6.0 (HRV). MD 6.6 (GM). Mo=7.8*10**18 Nm (BRK). Mo=5.1*10**18 Nm (GS). Mo=1.0*10**18 Nm (HRV). Mo=7.0*10**18 Nm (PPT). Felt (V) at Arcata, Crescent City, Honeydew, Kneeland, Redway and Samoa; (IV) at Alderpoint, Blue Lake, Carlotta, Elk, Fort Bragg, Fortuna, Garberville, Loleta, Miranda, Myers Flat, Petrolia, Piercy, Redcrest, Rio Dell, Westport, Whitethorn and Zenia. Felt in Butte, Del Norte, Humboldt, Mendocino, Shasta and Siskiyou Counties of northern California and as far south as the San Francisco Bay area. Also felt at Brookings, Oregon.
FEB 23	05 19 01.9	24.137 N	121.614 E	41 D	5.9 6.2	1.0	438	TAIWAN. Mw 6.2 (HRV). Mo=2.5*10**18 Nm (HRV). Two people killed and 14 injured on a bus struck by a landslide in the epicentral region. Felt (IV JMA) at Hua-lien, Hsin-chu and Su-ao; (III JMA) at I-lan, Tai-chung and Tai-pei. Felt in Fujian, Jiangxi and Zhejiang Provinces, China.
FEB 23	21 03 01.3	35.046 N	32.279 E	10 G	5.8 5.7	1.0	492	CYPRUS REGION. Mw 5.9 (GS), 5.9 (HRV). Ms 5.8 (BRK). Mo=7.0*10**17 Nm (GS). Mo=8.1*10**17 Nm (HRV). Two people killed and five injured in the Paphos area. Fifty houses destroyed, 70 seriously damaged and 500 slightly damaged in the Paphos and Nicosia areas. Twenty masonry houses were destroyed at Arodhes. Felt (VII) at Arodhes, Peristerona and Polis; (VI) at Kathikas, Peyia and Stroumbi; (V) at Kykkou Monastery; (IV) at Larnaca, Limassol and Nicosia; (III) at Paralimni. Felt throughout Cyprus. Also felt in northern Israel and Lebanon.
MAR 04	23 23 40.6	1.282 N	77.307 W	5 G	4.4	1.2	49	COLOMBIA. At least eight people killed, ten injured and eight houses damaged in the Pasto area.
MAR 19	23 53 14.9	4.183 S	135.109 E	33 N	6.2 7.1	1.4	334	IRIAN JAYA REGION, INDONESIA. Mw 6.8 (GS), 6.9 (HRV). Ms 7.1 (BRK). Mo=2.1*10**19 Nm (GS). Mo=2.2*10**19 Nm (HRV). Mo=7.8*10**19 Nm (PPT). Some minor damage to buildings in the Ayam, Pakfak and Nabire areas. Felt in much of Irian Jaya.

DATE	ORIGIN TIME			GEOGRAPHIC COORDINATES		DEPTH	MAGNITUDES SD			NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
	UTC	HR	MN	SEC	LAT		LONG	GS	MB		
APR 01	03	49	33.5	37.925 N	139.186 E	11 G	5.8	4.9	1.0	429	EASTERN HONSHU, JAPAN. Mw 5.3 (GS), 5.4 (HRV). Mo=1.1*10**17 Nm (GS). Mo=1.5*10**17 Nm (HRV). At least 39 people injured and 504 buildings damaged or destroyed in Niigata Prefecture, mostly in the Niigata area. Felt (IV JMA) at Niigata and on Sado; (III JMA) at Sakata and Shirakawa. Also felt at Tokyo and Yokohama.
APR 07	22	06	56.8	15.199 S	173.529 W	21 G	6.8	8.0	1.1	670	TONGA ISLANDS. Mw 7.4 (GS), 7.4 (HRV). Ms 8.1 (BRK). MD 7.1 (SVA). Mo=1.2*10**20 Nm (GS). Mo=1.3*10**20 Nm (HRV). Mo=1.1*10**20 Nm (PPT). Felt (V) at Apia, Western Samoa. Local tsunami generated with recorded maximum wave heights (peak-to-trough) of about 30 cm at Pago Pago, American Samoa and about 5 cm on Niue Island.
APR 08	17	45	12.9	21.833 N	142.691 E	267 G	6.4		0.9	385	MARIANA ISLANDS REGION. Mw 6.2 (GS), 6.2 (HRV). mb 6.7 (BRK). Mo=2.5*10**18 Nm (GS). Mo=2.5*10**18 Nm (HRV).
APR 14	00	32	56.1	30.285 N	103.347 W	18 G	5.6	5.7	1.0	397	WESTERN TEXAS. Mw 5.7 (GS), 5.7 (HRV). Mo=3.9*10**17 Nm (GS). Mo=3.8*10**17 Nm (HRV). Two people slightly injured in Brewster County. Slight damage (VI) at Alpine and Fort Davis. Also slight damage in the Marathon and Ozona areas. Felt (V) at Balmorhea, Barstow, Coynosa, Fort Stockton, Imperial, Kermit, Marfa, Pecos, Presidio, Sanderson, Sheffield, Toyah, Wickett and Wink; (IV) at Big Spring, Cameron, Crane, Midland, Odessa, Pyote and Valentine. Also felt (V) at Jal and Malaga; (IV) at Artesia, Dexter and White City, New Mexico. Felt in much of western and central Texas as far east as San Antonio and the Dallas-Fort Worth area. Felt west as far as Sierra Blanca, Texas and north to Roswell, New Mexico.
APR 14	13	15	17.3	60.774 S	20.074 W	11 G	5.5	5.8	1.2	110	SOUTHWESTERN ATLANTIC OCEAN. Mw 6.5 (GS), 6.3 (HRV). Mo=6.0*10**18 Nm (GS). Mo=2.9*10**18 Nm (HRV). Mo=5.7*10**18 Nm (PPT).
APR 17	23	28	06.8	45.928 N	151.283 E	23 G	6.1	6.4	1.0	651	KURIL ISLANDS. Mw 6.7 (GS), 6.8 (HRV). Ms 6.2 (BRK). Mo=1.1*10**19 Nm (GS). Mo=1.5*10**19 Nm (HRV). Mo=2.6*10**19 Nm (OBN), 1.4*10**19 Nm (PPT). Felt (VI) on Urup; (V) at Kurilsk, Iturup; (IV) on Simushir and Shikotan; (III) at Yuzhno-Kurilsk, Kunashir.
APR 20	08	45	11.6	6.279 N	126.777 E	94 G	6.2		1.1	510	MINDANAO, PHILIPPINE ISLANDS. Mw 6.6 (GS), 6.5 (HRV). Mo=9.0*10**18 Nm (GS). Mo=5.9*10**18 Nm (HRV). Mo=8.1*10**18 Nm (PPT).
APR 21	00	09	54.3	12.011 N	125.656 E	20 G	6.2	6.9	1.0	439	SAMAR, PHILIPPINE ISLANDS. Mw 6.7 (GS), 6.9 (HRV). Ms 6.9 (BRK). Mo=1.4*10**19 Nm (GS). Mo=2.3*10**19 Nm (HRV). Mo=2.9*10**19 Nm (PPT). Felt (IV RF) at Surigao, Mindanao and (III RF) at Catarman, Samar.
APR 21	00	30	10.8	11.925 N	125.564 E	17 G	6.3	7.2	1.0	443	SAMAR, PHILIPPINE ISLANDS. Mw 6.8 (HRV). Mo=2.0*10**19 Nm (HRV).
APR 21	00	34	46.0	12.059 N	125.580 E	21 G	6.3	7.3	1.2	201	SAMAR, PHILIPPINE ISLANDS. Mw 7.1 (GS), 7.2 (HRV). Mo=5.0*10**19 Nm (GS). Mo=6.6*10**19 Nm (HRV). Mo=1.2*10**20 Nm (PPT). Some damage occurred at Borongan and Sulat. Felt (IV RF) at Butuan, Mindanao; (III RF) on Masbate; (II RF) on Cebu and at Cagayan de Oro, Mindanao. Also felt at Davao, Mindanao. Local tsunami generated with maximum wave heights (peak-to-trough) of 10 cm recorded at Legaspi, Luzon.
APR 21	05	17	01.3	12.047 N	125.920 E	27 G	5.6	6.9	1.1	234	SAMAR, PHILIPPINE ISLANDS. Mw 6.6 (GS), 6.8 (HRV). Ms 6.8 (BRK). Mo=7.9*10**18 Nm (GS). Mo=2.0*10**19 Nm (HRV). Mo=3.3*10**19 Nm (PPT). Felt at Davao, Mindanao.
APR 23	02	55	55.1	51.334 N	179.714 E	17 G	6.2	6.5	1.0	573	RAT ISLANDS, ALEUTIAN ISLANDS. Mw 6.4 (GS), 6.5 (HRV). ML 6.7 (PMR). Ms 6.2 (BRK). Mo=4.4*10**18 Nm (GS). Mo=6.2*10**18 Nm (HRV). Mo=1.0*10**19 Nm (PPT). Felt (IV) on Adak.
APR 23	05	08	01.9	12.390 N	125.396 E	24 G	6.1	6.6	1.0	463	SAMAR, PHILIPPINE ISLANDS. Mw 6.6 (GS), 6.8 (HRV). Ms 6.6 (BRK). Mo=1.0*10**19 Nm (GS). Mo=1.5*10**19 Nm (HRV). Mo=3.0*10**19 Nm (PPT).
APR 28	16	30	00.7	44.072 N	148.004 E	29 G	6.5	6.8	0.9	571	KURIL ISLANDS. Mw 6.9 (GS), 6.9 (HRV). Ms 6.6 (BRK). Mo=2.9*10**19 Nm (GS). Mo=2.8*10**19 Nm (HRV). Mo=3.7*10**19 Nm (OBN), 3.9*10**19 Nm (PPT). Felt (VII) on Kunashir and Iturup, (V) on Shikotan and (IV) at Kurilsk, Iturup.
MAY 02	06	06	05.6	3.792 S	76.917 W	97 G	6.5		1.0	604	NORTHERN PERU. Mw 6.7 (GS), 6.7 (HRV). Mo=1.3*10**19 Nm (GS). Mo=1.3*10**19 Nm (HRV). Mo=1.2*10**19 Nm (PPT). Felt at Andoas, Moyobamba, Tarapoto and along the Peru-Ecuador border.

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DATE	ORIGIN TIME			GEOGRAPHIC COORDINATES		DEPTH	MAGNITUDES			SD	NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
	UTC	HR	MN	SEC	LAT		LONG	GS	MB			
MAY 05	03	53	45.0	12.626 N	125.297 E	16 G	6.2	7.0	0.9	338	SAMAR, PHILIPPINE ISLANDS. Mw 7.0 (GS), 7.1 (HRV). Ms 7.1 (BRK). Mo=3.8*10**19 Nm (GS). Mo=4.5*10**19 Nm (HRV). Mo=4.5*10**19 Nm (PPT). Felt on Catanduanes, Leyte and Masbate. Also felt in southern Luzon.	
MAY 13	08	47	12.7	40.149 N	21.695 E	14 G	6.2	6.6	1.2	580	GREECE. Mw 6.4 (GS), 6.6 (HRV). Ms 6.8 (BRK). ML 6.2 (TTG), 6.1 (ATH). Mo=4.7*10**18 Nm (GS). Mo=7.6*10**18 Nm (HRV). Mo=2.0*10**19 Nm (PPT). Twenty-five people injured and substantial damage in the Grevena-Kozani area. Maximum intensity VIII. The earthquake and aftershocks destroyed 5,000 homes and damaged 7,000 others with a preliminary estimate of 450 million U.S. dollars in damage. Felt in central and northern Greece, including Thessaloniki. Felt (IV-VI) in the former Yugoslav Republic of Macedonia. Felt (III) at Herceg Novi, Podgorica and Ulcinj, Yugoslavia.	
MAY 14	11	33	18.8	8.378 S	125.127 E	11 G	6.2	6.9	1.4	299	TIMOR REGION, INDONESIA. Mw 6.5 (GS), 6.9 (HRV). Mo=6.3*10**18 Nm (GS). Mo=2.4*10**19 Nm (HRV). Mo=8.6*10**19 Nm (PPT). Eleven people missing on Timor. Several houses destroyed by a local tsunami in the Dili area. Considerable damage also occurred in the Maliana and Maubara areas. Landslides occurred in the epicentral area.	
MAY 15	04	05	57.8	41.603 N	88.820 E	0 G	6.1	5.0	1.0	514	SOUTHERN XINJIANG, CHINA. Underground nuclear explosion.	
MAY 16	20	12	44.2	23.008 S	169.900 E	20 G	6.9	7.7	1.3	592	LOYALTY ISLANDS REGION. Mw 7.3 (GS), 7.7 (HRV). Ms 7.8 (BRK). Mo=9.7*10**19 Nm (GS). Mo=3.9*10**20 Nm (HRV). Mo=2.5*10**20 Nm (PPT). Felt (III) on the Loyalty Islands and at Noumea, New Caledonia. Tsunami generated with maximum wave heights (peak-to-trough) at the following locations: 40 cm at Port-Vila, Vanuatu; 10 cm at Pago Pago, American Samoa; 6 cm at Lautoka and 5 cm at Suva, Fiji; 3 cm at Apia, Western Samoa; 3 cm at Nukualofa, Tonga; 3 cm at Rarotonga, Cook Islands. The tsunami was also recorded along the coast of New South Wales, Australia.	
MAY 17	11	23	49.5	23.030 S	170.108 E	20 G	5.9	6.5	1.4	347	LOYALTY ISLANDS REGION. Mw 6.2 (GS), 6.5 (HRV). Ms 6.5 (BRK). Mo=2.2*10**18 Nm (GS). Mo=5.4*10**18 Nm (HRV). Mo=7.2*10**18 Nm (PPT).	
MAY 18	00	06	27.4	0.893 S	21.996 W	12 G	6.2	6.2	1.0	536	CENTRAL MID-ATLANTIC RIDGE. Mw 6.7 (GS), 6.8 (HRV). Ms 6.1 (BRK). Mo=1.3*10**19 Nm (GS). Mo=1.8*10**19 Nm (HRV). Mo=2.0*10**19 Nm (PPT).	
MAY 19	21	30	06.4	1.021 S	120.505 E	26 D	5.5	5.3	1.2	188	SULAWESI, INDONESIA. Mw 5.9 (HRV). Ms 5.2 (BRK). Mo=7.7*10**17 Nm (HRV). Twenty-six people injured and 115 houses damaged in the Parigi area. Felt strongly at Palu and Poso.	
MAY 21	06	13	11.8	8.265 S	122.977 E	28 D	5.2	4.6	1.2	89	FLORES REGION, INDONESIA. Mw 5.2 (HRV). Mo=7.7*10**16 Nm (HRV). One person killed, 5 injured and several buildings destroyed on Adonara.	
MAY 23	10	01	28.4	43.655 N	141.736 E	17 D	5.5	5.3	0.9	453	HOKKAIDO, JAPAN REGION. Mw 5.6 (HRV). Mo=3.1*10**17 Nm (HRV). Four people slightly injured on Hokkaido. Felt (IV JMA) at Hokuryu and (III JMA) at Rumoi.	
MAY 23	22	10	11.8	55.945 S	3.361 W	10 G	5.4	6.5	1.3	80	SOUTHERN MID-ATLANTIC RIDGE. Mw 6.6 (GS), 6.8 (HRV). Mo=8.5*10**18 Nm (GS). Mo=1.5*10**19 Nm (HRV). Mo=3.3*10**19 Nm (PPT).	
MAY 26	03	11	17.1	12.115 N	57.939 E	62 *	5.4		1.0	224	ARABIAN SEA. Mw 6.5 (HRV). Mo=6.1*10**18 Nm (HRV).	
MAY 27	13	03	52.6	52.629 N	142.827 E	11 G	6.7	7.5	0.9	599	SAKHALIN ISLAND. Mw 7.1 (GS), 7.1 (HRV). Ms 7.3 (BRK). Mo=4.3*10**19 Nm (GS). Mo=4.3*10**19 Nm (HRV). Mo=1.8*10**19 Nm (OBN). Mo=5.6*10**19 Nm (PPT). As many as 1,989 people killed, about 750 injured and severe damage (IX) in the Neftegorsk area. Some damage (VII) occurred at Okha. Felt (VI) at Moskalvo; (V) at Nikolayevsk-na-Amure and Nyvrovo; (IV) at Aleksandrovsk-Sakhalinskiy and Nysh.	
JUN 14	11	11	47.4	12.128 N	88.360 W	25 D	5.7	6.1	1.2	379	OFF COAST OF CENTRAL AMERICA. Mw 6.6 (HRV). Mo=7.5*10**18 Nm (HRV). Mo=2.5*10**19 Nm (PPT).	

DATE	ORIGIN TIME			GEOGRAPHIC COORDINATES		DEPTH	MAGNITUDES SD			NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
	HR	MN	SEC	LAT	LONG		GS	MB	Msz		
JUN 15	00	15	48.7	38.401 N	22.283 E	14 G	6.1	6.5	1.3	606	GREECE. Mw 6.3 (GS), 6.5 (HRV). Ms 6.4 (BRK). MD 6.0 (ATH). ML 6.0 (TTG), 5.7 (THE). Mo=3.3*10**18 Nm (GS). Mo=6.0*10**18 Nm (HRV). Twenty-six people killed and 60 injured in the Aiyion area. Extensive damage at Aiyion and Eratini. Damage also at Corinth, Patrai and Pirgos. Preliminary estimate of 660 million U.S. dollars damage. Felt at Athens, Ioannina, Kalamai, Kardhitsa and Kozani. Also felt on Kefallinia.
JUN 21	15	28	51.7	61.673 S	154.766 E	10 G	5.8	6.7	1.3	230	BALLENY ISLANDS REGION. Mw 6.7 (GS), 6.7 (HRV). Mo=1.1*10**19 Nm (GS). Mo=1.3*10**19 Nm (HRV). Mo=1.3*10**19 Nm (PPT).
JUN 24	06	58	06.6	3.959 S	153.930 E	386 D	6.2		1.0	496	NEW IRELAND REGION, P.N.G. Mw 6.8 (GS), 6.8 (HRV). mb 6.1 (BRK). Mo=1.5*10**19 Nm (GS). Mo=1.8*10**19 Nm (HRV). Mo=4.0*10**19 Nm (PPT).
JUN 25	06	59	06.2	24.600 N	121.700 E	52 D	5.8	5.6	1.0	442	TAIWAN. Mw 5.9 (GS), 6.0 (HRV). mb 6.1 (BRK). Mo=7.0*10**17 Nm (GS). Mo=1.0*10**18 Nm (HRV). One person killed, three injured and six houses damaged by landslides in the epicentral area. Felt throughout Taiwan. Also felt (II JMA) on Kin-men and Peng-hu.
JUN 29	12	24	03.2	19.544 S	169.287 E	139 D	6.3		1.0	466	VANUATU ISLANDS. Mw 6.6 (GS), 6.6 (HRV). mb 6.9 (BRK). Mo=8.5*10**18 Nm (GS). Mo=9.3*10**18 Nm (HRV). Mo=1.8*10**19 Nm (PPT). Felt on the Loyalty Islands.
JUL 03	19	50	50.6	29.211 S	177.589 W	35 G	6.5	7.2	1.2	538	KERMADEC ISLANDS, NEW ZEALAND. Mw 7.2 (GS), 7.2 (HRV). Me 6.8 (GS). Ms 7.2 (BRK). Mo=6.3*10**19 Nm (GS). Mo=6.2*10**19 Nm (HRV). Mo=5.6*10**19 Nm (PPT). Felt (VI) on Raoul Island.
JUL 11	21	46	39.7	21.966 N	99.196 E	13 D	6.1	7.1	1.3	411	MYANMAR-CHINA BORDER REGION. Mw 6.8 (GS), 6.8 (HRV). Me 7.1 (GS). Ms 6.9 (BRK). Mo=1.6*10**19 Nm (GS). Mo=1.9*10**19 Nm (HRV). Mo=4.9*10**19 Nm (PPT). Eleven people killed, 136 injured, more than 100,000 houses destroyed and 42,000 damaged in the Lancang-Menglian-Ximeng area, China. Some buildings also damaged in Chiang Mai and Chiang Rai Provinces, Thailand.
JUL 12	15	46	56.8	23.260 S	170.865 E	11 G	6.0	6.4	1.0	467	LOYALTY ISLANDS REGION. Mw 6.5 (GS), 6.4 (HRV). Me 6.3 (GS). Mo=6.4*10**18 Nm (GS). Mo=5.3*10**18 Nm (HRV). Mo=3.2*10**18 Nm (PPT).
JUL 21	22	44	04.5	36.427 N	103.123 E	13 G	5.7	5.4	1.0	409	GANSU, CHINA. Mw 5.5 (GS), 5.6 (HRV). Me 5.5 (GS). Mo=1.7*10**17 Nm (GS). Mo=2.7*10**17 Nm (HRV). Fourteen people killed, at least 60 injured, 5,000 homeless, 4,500 houses destroyed and 5,000 houses damaged in the Yongdeng area. Felt at Baiyin, Dingxi, Jingtai, Lanzhou, Tianzhu and Wuwei. Also felt at Xining, Qinghai.
JUL 26	23	42	02.7	2.534 N	127.681 E	65 G	6.0		1.1	343	NORTHERN MOLUCCA SEA. Mw 6.4 (GS), 6.3 (HRV). Me 6.7 (GS). Mo=3.9*10**18 Nm (GS). Mo=3.7*10**18 Nm (HRV). Mo=7.1*10**18 Nm (PPT).
JUL 28	14	29	11.0	21.182 S	175.394 W	92 G	6.3		0.8	561	TONGA ISLANDS. Mw 6.4 (GS), 6.4 (HRV). Me 6.6 (GS). Mo=4.8*10**18 Nm (GS). Mo=4.3*10**18 Nm (HRV). Mo=1.1*10**19 Nm (PPT).
JUL 30	05	11	23.6	23.340 S	70.294 W	46 G	6.6	7.3	1.1	489	NEAR COAST OF NORTHERN CHILE. Mw 8.0 (GS), 8.0 (HRV). Me 7.6 (GS). Ms 7.2 (BRK). Mo=1.0*10**21 Nm (GS). Mo=1.2*10**21 Nm (HRV). Mo=2.3*10**21 Nm (PPT). Three people killed, 58 injured, 630 homeless and 115 houses destroyed (VII) in the Antofagasta area. Landslides blocked several roads in the Antofagasta area. One person injured at Mejillones. Several houses damaged at Calama, Mejillones, San Pedro de Atacama, Taltal and Tocopilla. Felt (VI) at Baquedano, Chuquicamata, Copiapo, Diego de Almagro, Inca de Oro, Iquique, Mejillones, Peine, Sierra Gorda, Taltal, Tierra Amarilla and Tocopilla; (V) at Chanaral, El Salvador, Huasco and Vallenar; (IV) at Arica, Caldera and La Serena. Felt in Buenos Aires, Cordoba, Jujuy, La Rioja, Mendoza, Salta and San Juan Provinces and as far away as Buenos Aires, Argentina. Also felt in southern Peru and (III) at La Paz, Bolivia. Tsunami generated with maximum wave heights (peak-to-trough, in cm) recorded at the following selected tide stations: 55 at Valparaiso, Chile; 10 on Easter Island; 75 at Hilo, 70 at Kahului, 15 at Honolulu and 12 at Nawiliwili, Hawaii; 27 at Crescent City, 25 at Santa Monica, 11 at San Diego and 10 at Los Angeles, California; 30 at Adak, 21 at Sand Point, 20 on Shemya, 10 at Kodiak and 9 at Seward, Alaska; 25 at Pago Pago, American Samoa; 9 at Papeete, Tahiti; 29 at Miyako and 26 at Hachinche, Japan.
AUG 14	04	37	17.5	4.836 S	151.515 E	128 G	6.4		1.0	549	NEW BRITAIN REGION, P.N.G. Mw 6.7 (GS), 6.7 (HRV). Me 6.6 (GS). Mo=1.2*10**19 Nm (GS). Mo=1.4*10**19 Nm (HRV). Mo=2.8*10**19 Nm (PPT). Felt in the epicentral area.

DATE	ORIGIN TIME			GEOGRAPHIC COORDINATES		DEPTH	MAGNITUDES			SD	NO. STA USED	REGION, CONTRIBUTED MAGNITUDES AND COMMENTS
	HR	MN	SEC	LAT	LONG		GS	MB	Msz			
AUG 16	10	27	28.6	5.799 S	154.178 E	30 G	6.5	7.8	1.3	459	SOLOMON ISLANDS. Mw 7.6 (GS), 7.7 (HRV). Me 7.3 (GS). Ms 7.8 (BRK). Mo=2.6*10**20 Nm (GS). Mo=4.6*10**20 Nm (HRV). Mo=3.1*10**20 Nm (PPT). Minor damage in the epicentral area. Landslides blocked a road between Rabaul and Kokopo, New Britain. Felt strongly on Shortland Island. Tsunami generated with maximum wave heights (peak-to-trough) of 55 cm at Rabaul, New Britain and 11 cm on Kwajalein Island.	
AUG 16	16	24	26.5	5.429 S	153.773 E	19 G	5.8	6.7	1.1	391	NEW IRELAND REGION, P.N.G. Mw 6.5 (GS), 6.6 (HRV). Me 6.4 (GS). Ms 6.8 (BRK). Mo=6.9*10**18 Nm (GS). Mo=8.4*10**18 Nm (HRV).	
AUG 16	23	10	23.9	5.771 S	154.347 E	33 N	6.2	7.2	1.2	365	SOLOMON ISLANDS. Mw 7.2 (GS), 7.2 (HRV). Me 6.8 (GS). Ms 7.2 (BRK). Mo=6.6*10**19 Nm (GS). Mo=7.0*10**19 Nm (HRV). Mo=5.0*10**19 Nm (PPT). Felt throughout the Solomon Islands.	
AUG 17	00	59	57.7	41.559 N	88.800 E	0 G	6.0		0.9	586	SOUTHERN XINJIANG, CHINA. Underground nuclear explosion.	
AUG 17	10	01	25.9	5.168 S	153.447 E	21 G	5.6	6.4	1.2	252	NEW IRELAND REGION, P.N.G. Mw 6.2 (GS), 6.4 (HRV). Me 5.9 (GS). Ms 6.5 (BRK). Mo=1.9*10**18 Nm (GS). Mo=4.2*10**18 Nm (HRV). Mo=4.5*10**18 Nm (PPT).	
AUG 19	21	43	31.9	5.139 N	75.577 W	120 G	6.2		1.0	621	COLOMBIA. Mw 6.5 (GS), 6.6 (HRV). Me 6.3 (GS). mb 6.7 (BRK). Mo=7.2*10**18 Nm (GS). Mo=7.7*10**18 Nm (HRV). Some damage and power outages in the epicentral area. Felt at Bogota, Manizales, Medellin and Pereira. Also felt in central Colombia.	
AUG 23	07	06	02.7	18.856 N	145.218 E	595 G	6.3		0.9	623	MARIANA ISLANDS. Mw 7.1 (GS), 7.1 (HRV). Me 6.8 (GS). mb 6.3 (BRK). Mo=4.6*10**19 Nm (GS). Mo=4.4*10**19 Nm (HRV). Mo=3.2*10**19 Nm (PPT). Felt on Saipan.	
AUG 28	10	46	12.0	26.092 N	110.284 W	12 G	5.7	6.5	1.1	207	GULF OF CALIFORNIA. Mw 6.6 (GS), 6.5 (HRV). Me 6.9 (GS). Mo=1.0*10**19 Nm (GS). Mo=6.1*10**18 Nm (HRV). Mo=6.7*10**18 Nm (PPT).	
AUG 31	17	10	35.0	15.838 S	166.426 E	17 G	6.1	6.4	1.0	460	VANUATU ISLANDS. Mw 6.4 (GS), 6.4 (HRV). Me 6.1 (GS). Ms 6.6 (BRK). Mo=4.3*10**18 Nm (GS). Mo=5.3*10**18 Nm (HRV). Mo=8.0*10**18 Nm (PPT).	
SEP 05	21	29	58.4	21.852 S	138.844 W	0 G	4.8		0.8	95	TUAMOTU ARCHIPELAGO REGION. Underground nuclear explosion on Mururoa.	
SEP 14	14	04	31.4	16.779 N	98.597 W	23 G	6.4	7.2	1.2	565	NEAR COAST OF GUERRERO, MEXICO. Mw 7.4 (GS), 7.4 (HRV). Me 7.2 (GS). Ms 7.2 (BRK). Mo=1.4*10**20 Nm (GS). Mo=1.3*10**20 Nm (HRV). Mo=1.3*10**20 Nm (PPT). Three people killed, nearly 100 injured, 500 homeless and extensive damage in Guerrero. Several people injured, 400 homeless and considerable damage in Oaxaca. Some minor damage in Puebla and at Mexico City. Felt strongly along the Pacific coast of Mexico from Michoacan to Chiapas.	
SEP 17	17	09	20.6	17.093 S	66.707 E	8 G	5.6	6.0	0.9	344	MAURITIUS-REUNION REGION. Mw 6.4 (GS), 6.5 (HRV). Me 6.6 (GS). Ms 6.6 (BRK). Mo=4.7*10**18 Nm (GS). Mo=6.4*10**18 Nm (HRV). Mo=1.0*10**19 Nm (PPT).	
SEP 23	22	31	56.3	10.680 S	78.581 W	60 G	6.0		1.2	436	NEAR COAST OF PERU. Mw 6.5 (GS), 6.5 (HRV). Me 6.2 (GS). mb 6.4 (BRK). Mo=5.8*10**18 Nm (GS). Mo=5.8*10**18 Nm (HRV). Mo=1.3*10**19 Nm (PPT). Felt (V) at Huacho; (IV) at Lima and Trujillo; (III) at Canta and Huaraz; (II) at Chiclayo and Ica.	
OCT 01	15	57	16.2	38.063 N	30.134 E	33 N	5.8	6.2	1.1	491	TURKEY. Mw 6.0 (GS), 6.4 (HRV). Me 5.8 (GS). ML 5.7 (CSS), 5.6 (THE). Mo=1.3*10**18 Nm (GS). Mo=4.7*10**18 Nm (HRV). Mo=5.4*10**18 Nm (PPT). One hundred one people killed, 348 injured, 50,000 homeless and 4,500 buildings damaged or destroyed in the Dinar area. About 600 buildings destroyed at Evciler. Felt in much of western Turkey as far west as Izmir and as far north as Bursa and Yalova.	
OCT 01	23	29	57.9	22.250 S	138.745 W	0 G	5.4		0.9	249	TUAMOTU ARCHIPELAGO REGION. Underground nuclear explosion.	

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	HR	MN	SEC	UTC	LAT		LONG	GS	MB			
OCT 03	01	51	23.9	2.750 S	77.881 W	24 G	6.5	7.0	0.9	650	PERU-ECUADOR BORDER REGION. Mw 6.8 (GS), 7.0 (HRV). Me 6.9 (GS). Ms 6.9 (BRK). Mo=1.9*10**19 Nm (GS). Mo=3.9*10**19 Nm (HRV). Mo=1.9*10**19 Nm (PPT). Two people killed, 5 injured and at least 83 homes damaged or destroyed in Ecuador. Some damage at Archidona, Canelos, Limon, Macas, Mendez, Patuca, Puyo, Santiago, Sucua and Tena, Ecuador. Slight damage (V) at Quito, Ecuador. Felt (V) at Ayabaca; (IV) at Chachapoyas and Moyobamba; (III) at Chulucanas, Jaen and Tumbes; (II) at Tarapoto, Peru. Felt in many parts of Ecuador, Peru and in Colombia as far north as Bogota.	
OCT 03	12	44	58.0	2.778 S	77.851 W	17 G	6.0	6.1	1.0	527	PERU-ECUADOR BORDER REGION. Mw 6.4 (GS), 6.5 (HRV). Me 6.1 (GS). Ms 5.9 (BRK). Mo=5.2*10**18 Nm (GS). Mo=5.4*10**18 Nm (HRV). Mo=4.2*10**18 Nm (PPT). Felt strongly in the epicentral area. Felt in many parts of Ecuador and in parts of Colombia. Also felt (III) in northern Peru.	
OCT 06	18	09	45.9	2.045 S	101.436 E	33 N	5.8	6.9	1.1	356	SOUTHERN SUMATERA, INDONESIA. Mw 6.7 (GS), 6.8 (HRV). Me 7.1 (GS). Ms 6.4 (BRK). Mo=1.3*10**19 Nm (GS). Mo=1.5*10**19 Nm (HRV). Eighty-four people killed, 1,868 injured, nearly 65,000 homeless and over 17,600 homes and buildings damaged or destroyed in Jambi Province. Landslides occurred in the epicentral area. Felt in many parts of central Sumatera and as far as southern Malaysia and Singapore.	
OCT 09	15	35	53.9	19.055 N	104.205 W	33 N	6.6	7.4	1.3	615	NEAR COAST OF JALISCO, MEXICO. Mw 7.9 (GS), 8.0 (HRV). Me 7.3 (GS). Ms 7.3 (BRK). Mo=9.1*10**20 Nm (GS). Mo=1.1*10**21 Nm (HRV). Mo=9.6*10**20 Nm (PPT). At least 49 people killed, 100 injured, nearly 1,000 homeless and extensive damage in the states of Colima and Jalisco. Most of the damage and casualties were in the Cihuatlan-Manzanillo area, Colima. Some damage also occurred in the states of Guerrero and Michoacan. Felt strongly at Mexico City. Felt by people in high-rise buildings as far as Dallas and Houston, Texas and Oklahoma City, Oklahoma. Landslides blocked roads between Guadalajara and Manzanillo. Tsunami generated with estimated runup heights of 200 to 500 cm in the Manzanillo area. Maximum wave heights (peak-to-trough) recorded at the following selected tide stations: 51 cm at Cabo San Lucas and 20 cm on Isla Socorro, Mexico; 100 cm on Hiva Oa, 30 cm on Nuku Hiva and 7 cm at Papeete, French Polynesia; 37 cm at Hilo, 34 cm at Kahului, 12 cm at Nawiliwili and 11 cm at Kawaihae, Hawaii; 37 cm at Pago Pago, American Samoa; 4 cm at Southport, Australia. Land subsidence of approximately 14 cm observed at the Manzanillo harbor.	
OCT 12	16	52	53.0	18.810 N	104.017 W	16 G	5.5	5.6	1.1	345	NEAR COAST OF JALISCO, MEXICO. Mw 5.9 (GS), 6.0 (HRV). Me 5.4 (GS). Ms 5.2 (BRK). Mo=7.3*10**17 Nm (GS). Mo=1.0*10**18 Nm (HRV). Mo=9.9*10**17 Nm (PPT). Five people injured and some additional damage at Manzanillo, Colima. Felt at Mexico City.	
OCT 18	10	37	26.3	27.929 N	130.175 E	28 G	6.4	6.9	1.2	521	RYUKYU ISLANDS. Mw 6.9 (GS), 7.1 (HRV). Me 6.9 (GS). Ms 6.7 (BRK). Mo=2.8*10**19 Nm (GS). Mo=5.7*10**19 Nm (HRV). Mo=9.0*10**19 Nm (PPT). One person injured on Amami O-shima. Felt (V JMA) on Kikai-shima and (IV JMA) at Naze, Amami O-shima. Tsunami generated with estimated runup heights of 100 to 260 cm on Kikai-shima and Amami O-shima, causing minor damage to boats. Maximum wave height (peak-to-trough) of 80 cm recorded on Nakano-shima.	
OCT 19	02	41	36.1	28.094 N	130.148 E	20 G	6.3	6.9	1.2	439	RYUKYU ISLANDS. Mw 6.7 (GS), 6.8 (HRV). Me 6.4 (GS). Ms 6.6 (BRK). Mo=1.1*10**19 Nm (GS). Mo=1.5*10**19 Nm (HRV). Felt (V JMA) on Amami O-shima. Landslides occurred on Kikai-shima. Local tsunami generated with wave heights up to 1.5 meters along some coastal areas.	
OCT 21	02	38	57.1	16.840 N	93.469 W	159 G	6.3		1.1	640	CHIAPAS, MEXICO. Mw 7.1 (GS), 7.2 (HRV). Me 6.4 (GS). Mo=4.6*10**19 Nm (GS). Mo=7.1*10**19 Nm (HRV). Mo=1.5*10**20 Nm (PPT). Several houses damaged at Larrainzar. Felt strongly in many parts of southern Mexico and at Mexico City. Also felt in many parts of Guatemala. Felt (II) at Metapan, El Salvador.	

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	UTC	HR	MN	SEC	LAT		LONG	GS	MB			
OCT 23	22	46	50.8	26.003 N	102.227 E	10 G	5.8	6.4	1.0	460	SICHUAN, CHINA. Mw 6.2 (GS), 6.2 (HRV). Me 6.5 (GS). Ms 6.1 (BRK). Mo=1.9*10**18 Nm (GS). Mo=2.2*10**18 Nm (HRV). At least 81 people killed, 800 injured and more than 200 houses damaged or destroyed in the Wuding area. Felt strongly at Chuxiong, Dongchuan, Kunming, Qujing, Zhaotong and many other parts of northern Yunnan. Also felt in southwestern Sichuan, China and in northern Vietnam.	
OCT 27	21	59	58.1	21.891 S	138.983 W	0 G	5.4		0.8	268	TUAMOTU ARCHIPELAGO REGION. Underground nuclear explosion.	
NOV 01	00	35	32.7	28.906 S	71.417 W	20 G	6.3	6.4	1.1	521	NEAR COAST OF CENTRAL CHILE. Mw 6.6 (GS), 6.7 (HRV). Ms 6.3 (BRK). Mo=9.5*10**18 Nm (GS). Mo=1.1*10**19 Nm (HRV). Mo=2.1*10**19 Nm (PPT). Felt (VI) at La Serena and (II) at Santiago. Also felt (IV) in Mendoza Province, Argentina.	
NOV 08	07	14	18.6	1.833 N	95.050 E	33 N	6.2	6.9	1.1	492	OFF W COAST OF NORTHERN SUMATERA. Mw 6.8 (GS), 6.9 (HRV). Ms 6.7 (BRK). Mo=1.6*10**19 Nm (GS). Mo=2.7*10**19 Nm (HRV). Mo=2.0*10**19 Nm (PPT). Felt (III) at Medan, (II) at Bengkulu and Padangpanjang. Felt (III) at Gunungsitoli, Nias. Felt at Banda Aceh, Meulaboh, Sigli and Tapaktuan, and many other parts of northern Sumatera. Also felt in southern Thailand.	
NOV 21	21	29	58.0	21.879 S	139.032 W	0 G	4.8		1.0	118	TUAMOTU ARCHIPELAGO REGION. Underground nuclear explosion.	
NOV 22	04	15	11.9	28.826 N	34.799 E	10 G	6.2	7.3	1.3	542	EGYPT. Mw 7.1 (GS), 7.2 (HRV). Mo=4.9*10**19 Nm (GS). Mo=7.2*10**19 Nm (HRV). ML 6.2 (JER). At least eight people killed and 30 injured in the epicentral region, including two killed and 11 injured at Nuwaybi. Damage occurred in many parts of northeastern Egypt as far away as Cairo. One person was killed and two slightly injured at Al Bad, Saudi Arabia. Some damage occurred at Al Bad, Al Ula and Haql, Saudi Arabia. One person died of a heart attack, several people were injured, and substantial damage, power outages, and liquefaction occurred at Elat, Israel. Some damage also occurred at Jerusalem, Israel and Aqaba, Jordan. Felt from Sudan to Lebanon. Felt at Baghdad and Mosul, Iraq. Also felt by people in high-rise buildings at Limassol and Nicosia, Cyprus. Possible tsunami observed at Aqaba, Jordan.	
NOV 24	17	24	11.8	44.537 N	149.103 E	28 G	6.1	6.4	0.9	680	KURIL ISLANDS. Mw 6.4 (GS), 6.6 (HRV). Ms 6.1 (BRK). Mo=5.3*10**18 Nm (GS). Mo=8.1*10**18 Nm (HRV). Felt (V) on Iturup and (III) on Shikotan.	
DEC 01	05	20	28.8	10.160 N	104.000 W	10 G	5.6	6.3	1.1	242	OFF COAST OF MEXICO. Mw 6.6 (GS), 6.6 (HRV). Mo=8.9*10**18 Nm (GS). Mo=8.7*10**18 Nm (HRV). Mo=1.2*10**19 Nm (PPT). Felt (V) at Kurilsk.	
DEC 02	17	13	18.6	44.505 N	149.237 E	18 G	6.0	6.6	1.2	558	KURIL ISLANDS. Mw 6.4 (GS), 6.6 (HRV). Ms 6.2 (BRK). Mo=4.6*10**18 Nm (GS). Mo=8.8*10**18 Nm (HRV). (Mo=1.2*10**19 Nm (PPT). Felt (V) at Kurilsk.	
DEC 03	18	01	08.9	44.663 N	149.300 E	33 N	6.6	7.9	1.1	703	KURIL ISLANDS. Mw 7.6 (GS), 7.9 (HRV). Mo=2.7*10**20 Nm (GS). Mo=8.2*10**20 Nm (HRV). Mo=8.1*10**20 Nm (PPT). Felt (V) on Iturup, (IV) on Matua and (III) on Kunashir. Felt (II JMA) at Akkeshi, Kushiro and Urakawa, Hokkaido. Also felt (II JMA) at Aomori and Mutsu, Honshu. tsunami generated with maximum recorded wave heights (peak-to-trough) as follows: 37 cm at Nemuro and 10 cm at Kushiro, Hokkaido; 13 cm on Wake Island and 6 cm at Ayukawa Bay, Honshu; 20 cm on Shemya and 10 cm at Adak, Alaska; 13 cm on Wake Island; 41 cm on Midway Island; 31 cm at Crescent City, California.	
DEC 19	20	56	06.3	15.301 N	90.154 W	10 G	5.0	4.8	1.3	100	GUATEMALA. Mw 5.4 (HRV). ML 5.3 (GCG). Ms 4.8 (BRK). Mo=1.3*10**17 Nm (HRV). One person killed and one person injured by rockslides at Tactic. Several houses damaged at San Miguel, Tucuru and Tamahu. Landslides occurred in the epicentral area. Felt (IV) at Coban and (III) at Guatemala City. Landslides occurred in the epicentral area.	
DEC 19	23	28	12.1	3.703 S	140.233 E	63 G	6.1	6.3	1.0	397	IRIAN JAYA, INDONESIA. Mw 6.5 (GS), 6.5 (HRV). Me 6.7 (GS). Ms 6.3 (BRK). Mo=7.0*10**18 Nm (GS). Mo=5.8*10**18 Nm (HRV). Mo=6.0*10**18 Nm (PPT). Two people killed by a landslide in the Pegunungan Jayawijaya area. Felt (IV) at Jayapura and Wamena, (III) at Tanahmerah and (II) at Nabire.	
DEC 25	04	43	24.4	6.903 S	129.151 E	142 D	6.3		1.0	558	BANDA SEA. Mw 7.0 (GS), 7.1 (HRV). Mo=3.6*10**19 Nm (GS). Mo=4.7*10**19 Nm (HRV). Mo=8.2*10**19 Nm (PPT). Felt (VI) at Saumlaki; (IV) at Ambon and Tual; (III) at Nabire and and Sorong, Indonesia. Also felt in northern Australia.	

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DATE	ORIGIN TIME			GEOGRAPHIC COORDINATES		DEPTH	MAGNITUDES		SD	NO. STA USED	REGION,	CONTRIBUTED	MAGNITUDES	AND	COMMENTS		
	HR	MN	SEC	LAT	LONG		GS	MB								Msz	
----- OTHER NOTABLE NORTH AMERICAN EARTHQUAKES IN 1995 -----																	
JAN 29	03	11	22.6	47.388 N	122.365 W	17	5.1	4.5		317	WASHINGTON. <SEA-P>.	Mw 5.1 (HRV).	MD 5.0 (SEA).	ML 4.9 (PGC).	Mo=4.5*10**16 Nm (HRV). Slight damage at Auburn and Tacoma. Felt (V) at Duvall, Gig Harbor, Issaquah, Kent, Kirkland, Marysville, Milton, Seahurst, Seattle and Snoqualmie; (IV) at Bellevue, Bothell, Buckley, Carnation, Chelan, Edmonds, Keyport, Lynnwood, Maple Valley, Port Orchard, Selah, Snohomish, Sumner and Tracyton. Felt from Vancouver, British Columbia to Salem, Oregon and as far east as Grand Coulee and Yakima, Washington.		
AUG 17	22	39	59.0	35.776 N	117.662 W	6	5.3	5.2		296	CENTRAL CALIFORNIA. <PAS-P>.	Mw 5.4 (HRV).	ML 5.4 (PAS).	Mo=1.1*10**17 Nm (BRK).	Mo=1.6*10**17 Nm (HRV). Slight damage in the Ridgecrest area. Felt (V) at Cantil, China Lake, Inyokern, Johannesburg, Onyx and Randsburg; (IV) at Bakersfield, Darwin, Hinkley, Kernville, Porterville, Tecopa and Tehachapi. Felt from the Los Angeles area north to Bishop and Fresno. Felt east as far as Las Vegas, Nevada.		
SEP 20	23	27	36.2	35.761 N	117.639 W	5	5.0	5.5		266	CENTRAL CALIFORNIA. <PAS-P>.	Mw 5.5 (GS), 5.6 (HRV).	ML 5.8 (PAS), 6.1 (BRK).	Mo=2.3*10**17 Nm (BRK).	Mo=2.3*10**17 Nm (GS).	Mo=2.6*10**17 Nm (HRV). Felt strongly in the China Lake-Ridgecrest area. Felt (V) at Darwin and Inyokern; (IV) at Barstow, Bodfish, Boron, Edwards, Glendale, Hinkley, Johannesburg, La Canada, Littlerock, Lone Pine, Santa Ana, Strathmore and Tehachapi. Felt in the Los Angeles area, south as far as San Diego and east to Las Vegas, Nevada.	
OCT 06	05	23	18.5	65.170 N	148.565 W	9	5.7	5.8		592	NORTHERN ALASKA. <AEIC>.	Mw 6.0 (GS), 6.0 (HRV).	Me 6.4 (GS).	ML 6.2 (AEIC), 6.2 (PMR).	Ms 5.5 (BRK).	Mo=1.2*10**18 Nm (GS).	Mo=1.1*10**18 Nm (HRV). Minor damage (VI) at Fairbanks. Felt (V) at Anderson, Delta Junction, Eielson Air Force Base, Ester, Nenana, North Pole, Rampart, Salcha and Wiseman; (IV) at Bettles, Cantwell, Dot Lake, Eagle, Fort Yukon, Lake Minchumina, Manley Hot Springs, Minto, Ruby, Tanana and Tok; (III) at Circle, Coldfoot, Hughes, McGrath, Paxson, Talkeetna, Valdez and Wasilla; (II) at Palmer. Felt throughout central Alaska as far south as Anchorage.

Compiled by Waverly J. Person

EXPLANATION OF ABBREVIATIONS AND SYMBOLS APPEARING IN THIS PUBLICATION

Abbreviations in Heading

MB - Body wave magnitudes.
 Msz - Vertical surface wave magnitudes.
 UTC - Coordinated Universal Time. HR MN SEC - Hour, minute, second.
 SD - Standard Deviation from the arithmetic mean of residuals.
 No. Sta. - Number of stations reporting P or PKP phases used in computation.

Symbols and Abbreviations Used in Comments

BRK--University of California, Berkeley, CA. PAS--California Institute of Technology, Pasadena, CA.
 AEIC--Alaska Earthquake Information Center, Fairbanks, Alaska.
 BGS--British Geological Survey, Edinburgh, United Kingdom. BNS--Nordrhein-Westfalen, Bensberg, Germany.
 BUL--Bulawayo, Zimbabwe. GRF--Grafenberg Array, Erlangen, Germany.
 HLW--Helwan Institute for Astronomy & Geophysics, Helwan, Egypt.
 ISK--Kandilli Observatory, Istanbul, Turkey. KBA--Barrage Koelnbrein, Austria.
 MDD--Instituto Geografico Nacional, Madrid, Spain. OBN--Institute of Physics of the Earth, Obninsk, Russia.
 PMG--Port Moresby, Papua New Guinea. PMR--Alaska Tsunami Warning Center, Palmer, Alaska.
 RAB--Rabaul, New Britain, Papua New Guinea. RBA--Institut Scientifique, Rabat, Morocco.
 ROM--Istituto Nazionale di Geofisico, Rome, Italy. RYD--King Saud University, Riyadh, Saudi Arabia.
 SLC--University of Utah, Salt Lake City, Utah, USA. UCC--Observatoire Royal de Belgique, Uccle, Bruxelles, Belgium.
 UPA--Universidad de Panama, Panama. VIE--Central Institute for Meteorology and Geodynamics, Vienna, Austria.

GM U.S. Geological Survey, Menlo Park, California.
 GS U.S. Geological Survey, National Earthquake Information Service (NEIS), Golden, Colorado.
 HRV Harvard University, Cambridge, Massachusetts
 PPT Laboratoire de Geophysique, Papeete, French Polynesia
 JMA Japan Meteorological Agency, Tokyo (also used to indicate 7-point Japanese Intensity Scale).
 MD Duration Magnitude.
 RF Rossi-Forel Intensity Scale.
 SPEC An NEIS solution based on use of dense local networks, a local crustal model, or other methods not routinely applied in calculating the hypocenter parameters.
 Roman Used to indicate intensity (when not followed by RF or JMA they refer to the Modified Mercalli Scale or any Numerals 12-point intensity scale closely related to it).

Symbols Following Depth

N Indicates the depth was restrained at 33 km for earthquakes whose character on seismograms indicates a shallow focus but whose depth is not satisfactorily determined by the data.
 D Indicates the depth was restrained by the computer program based on 2 or more compatible pP phases and/or unidentified secondary arrivals used as pP.
 G Indicates the depth was restrained by a geophysicist. Some depths are from broadband displacement seismograms.
 * Indicates a less well-constrained free depth. The 90% marginal confidence interval on depth is greater than 8.5 km and less than or equal to 16.0 km.

The lack of any symbol indicates that the 90% marginal confidence interval on depth is less than or equal to 8.5 km, or that a contributed hypocenter was computed with a free depth, regardless of the size of the confidence interval.

Symbols Following Origin Time

& Indicates that parameters of the hypocenter were supplied or determined by a computational procedure not normally used by the National Earthquake Information Service (NEIS). The source or nature of the determination is indicated by a 2 to 5 letter code enclosed by angle brackets and appearing in the first line of comments. These codes are included with the list of abbreviations above.
 * Indicates a less reliable solution. In general, the geometric mean of the semi-major and semi-minor axes of the horizontal 90% confidence ellipse is greater than 8.5 km and less than or equal to 16.0 km.
 ? Indicates a poor solution, published for completeness of the catalog. In general, the geometric mean of the semi-major and semi-minor axes of the horizontal 90% confidence ellipse is greater than 16.0 km. This includes a poor solution computed using data reported by a single network.

The lack of any symbol indicates that the geometric mean of the semi-major and semi-minor axes of the horizontal 90% confidence ellipse is less than or equal to 8.5 km.

APPROXIMATE CORRELATION OF GRADES FOR INTENSITY SCALES
REPORTED IN THIS PUBLICATION

Modified Mercalli 1931 -----	Japanese, 1950 (JMA) -----	Rossi-Forel, 1873 (RF) -----
I	0	I
II	I	I-II
III	II	III
IV	II-III	IV-V
V	III	V-VI
VI	IV	VI-VII
VII	IV-V	VIII-
VIII	V	VIII+-IX
IX	V-VI	IX+
X	VI	X
XI	VII	X
XII	VII	X

TRAVEL-TIME TABLES

In general, all hypocenters have been computed based on the 1940 Jeffreys-Bullen P and 1968 Bolt PKP travel-time tables. Some other earth model or computational procedure may have been used for those hypocenters which have been indicated by an ampersand (&) following the origin time.

MACROSEISMIC INFORMATION

Macroseismic information is compiled from various sources, including newspaper articles, Foreign Broadcast Information Service messages, U.S. Geological Survey Earthquake Reports and seismological station reports. Sources of information for particular events can be supplied on request from: U.S. Geological Survey, National Earthquake Information Center, Stop 967, Box 25046, Denver Federal Center, Denver, CO 80225, U.S.A.

GEOGRAPHIC REGIONS

The regions shown in the comments column are from the seismic and geographical regionalization of Flinn, Engdahl and Hill (1974), with occasional name changes which have been given in various issues of the Preliminary Determination of Epicenters Monthly Listing. The boundaries of these regions are defined at one degree intervals and differ slightly from irregular political boundaries.

NEIS MAGNITUDES

All magnitudes are NEIS magnitudes unless otherwise indicated. Average magnitudes are computed by a 25% trimmed mean as described by Rosenberger, J. L. and Gasko, M., 1983, "Comparing location estimators: trimmed means, medians, and trimean" in ___ Understanding Robust and Exploratory Data Analysis, ed. Hoaglin, D.C., Mosteller, F., and Tukey, J. W., John Wiley, New York.

Ms These surface wave magnitudes are computed from the I.A.S.P.E.I. formula:

$$M_s = \text{Log } (A/T) + 1.66 \text{ Log } D + 3.3$$

where:

A is the maximum ground amplitude in micrometers (microns) of the vertical component of the surface wave within the period range $18 < T < 22$.

T is the period in seconds.

D is the distance in geocentric degrees (station to epicenter) and $20' < D < 160'$.

No depth corrections are applied, and Ms magnitudes are not generally computed for depths greater than 50 km. The Ms value published is the average of the individual station magnitudes from reported T and A data.

If the uncertainty of the computed depth is considered great enough that the depth could be less than 50 km, an MS value may still be published, computed by the I.A.S.P.E.I. formula and not ___ corrected for depth.

In general, the Ms magnitude is more reliable than the MB magnitude as a means of yielding the relative "size" of a shallow-focus earthquake.

MB These compressional body wave (P-wave) magnitudes are computed according to the formula:

$$M_B = \text{Log } (A/T) + Q(D,h)$$

defined by Gutenberg and Richter (1956) except that T, the period in seconds, is restricted to $0.1 < T < 3.0$ and A, the ground amplitude in micrometers, is not necessarily the maximum in the P group. Q is a function of distance (D) and depth (h) where $D > 5'$.

mbLg These Lg body wave magnitudes are computed according to the formula:

$$mbLg = 3.75 + 0.90 \text{ Log } D + \text{Log } (A/T) \text{ for } 0.5' < D < 4'$$

$$mbLg = 3.30 + 1.66 \text{ Log } D + \text{Log } (A/T) \text{ for } 4' < D < 30'$$

as proposed by Nuttli (1973) where A is the ground amplitude in micrometers and T is the period in seconds calculated from the vertical component 1-second Lg waves. D is the distance in geocentric degrees.

ML These local magnitudes are computed according to the formula:

$$M_L = \text{Log } A - \text{Log } A_0$$

defined by Richter (1935) where A is the maximum trace amplitude in micrometers recorded on a standard short-period torsion seismometer and Log A₀ is a standard value as a function of distance where distance < 600 km.

CONTRIBUTED MAGNITUDES

Magnitudes appearing in the comments which have been contributed by organizations operating a network of stations may have been calculated from any one station in the network or may be an average magnitude from a number of stations from the network.

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