Seismological Bulletin 1959

Uppsala: 59° 51.5′ N, 17° 37.6′ E
Kiruna: 67° 50.4′ N, 20° 25.0′ E
Skalstugan: 63° 34.8′ N, 12° 16.8′ E
Göteborg: 57° 41.9′ N, 11° 58.7′ E

By

Markus Båth

Published by the Seismological Institute, Uppsala

Seismological Bulletin 1959

By

Markus Båth

Uppsala (abbreviated Up in the bulletin)

Location and ground: 59°51.5′N, 17°37.6′E; 14 m above mean sea level; granite.

Instruments: Wiechert 1000 kg pendulum E,N; Benioff variable reluctance E,N,Z (long-period) and E′,N′,Z′ (short-period); Press-Ewing E,N,Z (ultralong-period).

Instrumental constants for 1959:

a) Wiechert

T_0=seismograph free period,
V =static magnification,
ε =damping ratio,
r =max. deviation due to friction.

Instrument	Date 1959	T_0 sec	V	ε	r mm
Wiechert E	Jan 10	10.8	191	4.5	1.1
	July 2	10.8	185	4.4	0.7
Wiechert N	Jan 10	9.5	190	4.0	1.2
	July 2	9.8	181	4.7	1.0

Concerning the method of determination, see Wiechert (1903).

b) Benioff

T_0 =seismometer free period,
T_g =galvanometer free period,
l_0 =recording distance (from galvanometer lense to record),
$2\,\sigma_g l_0$=transference factor, where σ_g=a quantity depending on the electrodynamic properties of the transducer and the galvanometer (Benioff, 1932; Chakrabarty, 1949; Båth, 1959).
V_{max}=maximum dynamic magnification.

Instrument	Date	T_0 sec	T_g sec	$2\sigma_g l_0$ sec^{-1}	V_{max}
Benioff E	Feb 7, 1956	1.0	87	2.509×10^4	2000
	Mar 19, 1959	1.0	74	3.538×10^4	2810
Benioff N	Feb 7, 1956	1.0	85	3.705×10^4	2940
	Mar 19, 1959	1.0	87	3.267×10^4	2600
Benioff Z	Feb 7, 1956	1.0	89	1.892×10^4	1520
	Mar 19, 1959	1.0	76	2.085×10^4	1660
Benioff E′	July 10, 1956	1.0	0.7	2.090×10^6	88310
Benioff N′	July 10, 1956	1.0	0.7	2.363×10^6	99840
Benioff Z′	July 17, 1956	1.0	0.7	1.316×10^6	55580

Damping is critical both for seismometers and galvanometers. The test-weight method for determination of magnification curves for short-period instruments is not very reliable, and a comparison of parallel records of Benioff Z′ and Grenet-Coulomb Z′ suggests that the last value given above for V_{max} should be reduced to about 40000 (Båth, 1959). Similar reductions apply to E′ and N′.

c) Press-Ewing E,N,Z (ultralong-period). The following constants were determined in January, 1958 (T_o, T_g), March, 1959 (T_g) and in March, 1962 (V_{max}):

Instrument	T_0 sec	T_g sec Jan 1958	T_g sec Mar 1959	V_{max}
Press-Ewing E	15.0	87	91	2500
Press-Ewing N	15.0	81	86	2700
Press-Ewing Z	15.0	85	118	2200

The seismometers are overdamped by a factor of 2—3 and the galvanometers are overdamped by a factor of 6.

This installation is on loan from the Lamont Geological Observatory, Columbia University, New York, under IGY arrangements.

In the bulletin only the readings from Benioff E, N, Z, Z′ are reported as a rule. Readings from other records are included as supplements to those mentioned, when this seems necessary.

Kiruna (abbreviated Ki)

Location and ground: 67° 50.4′N, 20° 25.0′E; 390 m above mean sea level; porphyry.

Instruments: Grenet-Coulomb Z′, Galitzin E, N, Z.

Instrumental constants for 1959:

a) Grenet-Coulomb

In addition to the notation already given, we introduce the following:

k_g=transference factor,

L =reduced pendulum length.

Instrument	Date	T_0 sec	T_g sec	k_g sec^{-1}	L cm	l_0 cm	V_{max}
Grenet-Coulomb Z′	Sep 28, 1957	1.4	0.7	13936	12.2	100.6	11150

Damping is critical for seismometer and galvanometer.

Reference is made to Grenet (1946), Galitzin (1914), and Byerly (1942).

b) Galitzin

In addition to the notation above we introduce

μ^2=seismometer damping (Galitzin, 1914).

Instrument	Date	T_0 sec	T_g sec	μ^2	k_g sec^{-1}	L cm	l_0 cm	V_{max}
Galitzin E	Sep 27, 1957	11.8	11.8	+0.11	72.6	16.0	135.6	780
Galitzin N	Sep 28, 1957	12.8	11.9	+0.38	67.2	15.2	136.1	910
Galitzin Z	Sep 27, 1957	9.6	11.6	—0.37	234.2	41.0	135.3	740

Galvanometer damping is critical.

In February, 1959, the earlier pendulum clock was replaced by a quartz clock. This provides both the minute marks and controlled frequency for the drum motors, and has thus increased the accuracy of time readings.

Readings from all Kiruna records are reported in the bulletin.

Skalstugan (abbreviated Sk)

Location and ground: 63° 34.8′N, 12° 16.8′E; 580 m above mean sea level; gneiss.

Instrument: Grenet-Coulomb Z′.

Instrumental constants for 1959:

Instrument	Date	T_0 sec	T_g sec	k_g sec^{-1}	L cm	l_0 cm	V_{max}
Grenet-Coulomb Z′	Nov 21, 1955	1.4	0.8	~16000	~12	~100	~12000

Seismometer and galvanometer damping is critical.

The constants were checked on October 1, 1957.

Göteborg (abbreviated Gb)

Location and ground: 57° 41.9′N, 11° 58.7′E; 66 m above mean sea level; gneiss.

Instrument: Grenet-Coulomb Z′.

The instrument is operated with the same constants as when it was installed at Uppsala (1951—1957).

Instrument	Date	T_0 sec	T_g sec	k_g sec^{-1}	L cm	l_0 cm	V_{max}
Grenet-Coulomb Z′	Jan 19, 1952	1.4	0.5	16900	11.8	100	10530

Both seismometer and galvanometer damping is critical.

General remarks

In the presentation of the material we have followed the same principles as introduced in our bulletin for 1956.

All correspondence concerning our stations or records etc should be addressed to the central station: Seismological Institute, Uppsala, Sweden.

For notation of phases, see "Observations séismographiques" for Uppsala or Kiruna 1955. Concerning channel waves, see a review by Båth (1958).

The time used is Greenwich Mean Time (GMT).

C=compression,
D=dilatation,
μ=amplitude in microns, $1\mu=10^{-3}$ mm,
s=period in seconds,
$\triangle$=epicentral distance,
h=depth of hypocenter,
Magn.=magnitude, determined in the Gutenberg-Richter scale (M) by applying our station corrections (Båth, 1956).
Amplitudes are given only for Uppsala and Kiruna. The geographical names indicate only the region where the epicenter in located.

In the analysis of the records, use has been made of all available bulletins, especially those from Bureau Central International de Séismologie (BCIS), Strasbourg, and from United States Coast and Geodetic Survey (USCGS), Washington, D.C. The tables and methods of Jeffreys and Bullen (1940), Gutenberg and Richter (1937), Båth (1943 and 1947), Gutenberg (1951) have been used.

In preparing this bulletin the author has in different parts been assisted by Mrs. I. Pettersson and Mrs. I. Cederlund. Mr. S. Lindell at the Geophysical Observatory at Kiruna was in charge of the daily routine work at the Kiruna seismograph station. Mr. S. Persson and Mr. G. Tidefors were in charge of the daily routine work at Skalstugan and Göteborg respectively. The Swedish Natural Science Research Council has supported the work by giving funds for salaries to one assistant at Uppsala and for the printing of this volume.

References

Båth M., Sur une méthode pour calculer les tremblements de terre à foyer profond à l'aide des phases d'une seule station séismographique, Kungl. Svenska Vet.-akad:s Handl., 3:e ser., Bd 20, No. 4, 22 pp., 1943.

— Travel times of the principal earthquake waves for Uppsala, Bull. Geol. Inst. Uppsala, Vol. 32, pp. 105—129, 1947.

— The problem of earthquake magnitude determination, Publ. Bur. Centr. Séism. Int., Sér. A, Trav. Sci., Fasc. 19, pp. 5—93, 1956.

— Channel waves, Journ. Geophys. Res., Vol. 63, No. 3, pp. 583—587, 1958.

Båth M., Development of instrumental seismology in Sweden in 1949—1958, Geof. pura e appl., Vol. 43, No. 2, pp. 108—130, 1959.
Benioff H., A new vertical seismograph, Bull. Seism. Soc. Amer., Vol. 22, pp. 155—169, 1932.
Byerly P., Seismology, Prentice-Hall, New York, 256 pp., 1942.
Chakrabarty S. K., Response characteristics of electromagnetic seismographs and their dependence on the instrumental constants, Bull. Seism. Soc. Amer., Vol. 39, pp. 205—218, 1949.
Galitzin B., Vorlesungen über Seismometrie, Teubner, Leipzig u. Berlin, 538 pp., 1914.
Grenet G., L'étalonnage des séismographes électromagnétiques modernes, Ann. Géophys., Vol. 2, pp. 329—338, 1946.
Gutenberg B., PKKP, P′P′, and the earth's core, Trans. Amer. Geophys. Union, Vol. 32, No. 3, pp. 373—390, 1951.
Gutenberg B. and Richter C. F., Données relatives à l'étude des tremblements de terre à foyer profond, Publ. Bur. Centr. Séism. Int., Sér. A, Trav. Sci., Fasc. 15, 70 pp., 1937.
Jeffreys H. and Bullen K. E., Seismological tables, Brit. Ass. for the Advancement of Science, 48 pp., 1940.
Wiechert E., Theorie der automatischen Seismographen, Abh. d. K. Ges. d. Wiss. zu Göttingen, Math.-Phys. Kl., N.F., Bd II, No. 1, 128 pp., 1903.

Tables

1959							
Jan 1	Up	iP		02	12	06	
		iS		02	16	31	
				μ	s		
		P	N	0.6	3		
		P	Z	1.3	4		
		P	Z′	2.0	3		
		S	N	1.9	10		
		M	E	0.9	17		
		M	N	1.1	20		
		M	Z	1.9	18		
		△=2800 km=25°.					
	Ki	iP		02	10	38C	
		iS		02	13	59	
				μ	s		
		P	N	1.3	6		
		P	Z	1.0	6		
		P	Z′	1.2	1.5		
		S	N	1.6	4		
		M	E	1.5	16		
		M	N	1.9	16		
		M	Z	3.2	16		
		△=1900 km=17°.					
	Sk	iP		02	11	26	
		i		02	12	02	
	Gb	i(P)		02	12	29	
	Off northeast coast of Greenland. Magn.=5.9 (Up, Ki).						
» 1	Ki	iP		07	54	39	
	Sk	iP		07	54	14	
	Eastern Mediterranean.						
» 1	Ki	iP		16	04	10	
	Eastern Mediterranean.						
» 2	Up	iP		03	26	43C	
				μ	s		
		P	Z′	0.1	0.5		
	Ki	iP		03	25	50	
	Aleutian Islands.						
» 2	Up	iP		05	23	42	
		iS		05	26	47	
		i		05	27	04	
				μ	s		
		P	Z′	0.1	0.6		
		△=1900 km=17°.					
	Ki	eP		05	24	51	
		eRg		05	30	24	

1959							
Jan 2					μ	s	
(cont.)		M	E		0.8	14	
		M	Z		0.7	13	
	Sk	iP		05	23	54C	
		iRg		05	28	05	
	Gb	iP		05	22	53	
		iS		05	25	16	
		△=1450 km=13°.					
	Brittany, France.						
» 2	Ki	iP		12	03	39	
	Eastern Mediterranean.						
» 3	Up	eP		08	04	49	
					μ	s	
		M	E		2.4	18	
		M	N		3.1	16	
		M	Z		4.2	20	
	Ki	iP		08	05	51	
					μ	s	
		M	E		0.9	17	
		M	N		0.8	17	
		M	Z		1.2	17	
	Sk	eP		08	05	25	
	Turkey.						
» 3	Ki	eL		12	11		
					μ	s	
		M	E		1.8	20	
		M	N		0.6	16	
		M	Z		2.4	20	
	Peru.						
» 4	Up	iP		04	07	20	
		i		04	07	30	
					μ	s	
		P	Z′		0.1	0.7	
		M	N		1.6	18	
		M	Z		1.6	18	
	Ki	iP		04	08	08	
					μ	s	
		M	E		2.9	20	
		M	N		1.2	18	
		M	Z		2.6	23	
	Sk	eP		04	08	02	
		i		04	08	21	
	Arabian Sea. Magn.=5.6 (Up, Ki).						
» 4	Up	iP		08	07	14	
		ipP		08	07	40	
	Ki	iP		08	06	27	

1959 Jan 4 (cont.)					μ	s
		P	z′		0.1	0.8
	Kurile Islands. h = 100 km (Up).					
» 4	Up	iP		22	41	47
	Ki	iP		22	41	50
	Kashmir-Tibet.					
» 4	Up				—	
					μ	s
		M	E		0.8	16
		M	N		1.8	15
		M	Z		2.9	17
	Ki	iP		23	21	17
	Sk	eP		23	20	52
	Mediterranean Sea, near Crete.					
» 5	Up	iP		00	49	02
» 5	Up	iP		01	48	15
» 5	Up	e(P)		02	42	28
» 5	Up	iP		04	58	46
		eS		05	02	25
	△ = 2150 km = 19½°.					
	Ki	eP		04	59	50
		i		05	00	02
	Sk	iP		04	59	54
	Turkey.					
» 5	Sk	iP		05	06	20
	Baffin Bay.					
» 5	Up	iP		08	26	30
	Ki	iP		08	27	07
					μ	s
		P	z′		0.1	1.0
	Sk	iP		08	27	02
	Arabian Sea.					
» 5	Up	iPKP		10	06	02
		i		10	06	09
		i(PKS)		10	09	34
					μ	s
		M	N		1.6	25
		M	Z		2.2	25
	△ ~ 15300 km ~ 138°.					
	Ki	iPKP		10	05	56
		i(PKS)		10	09	09
					μ	s
		PKP	z′		0.3	1.6
		(PKS)	z′		0.2	1.6
		M	E		1.5	20
		M	N		1.4	20
		M	Z		1.3	19
	△ ~ 14550 km ~ 131°.					
	Sk	iPKP		10	06	00
		i(PKS)		10	09	30
	Loyalty Islands. Magn. = 5.9 (Up, Ki).					

1959 Jan 6	Ki	iP		01	36	14
		i		01	36	26
					μ	s
		P	z′		0.1	1.0
	Aleutian Islands.					
» 6	Ki	iP		04	12	41
	Turkey.					
» 6	Up	iP		10	50	30
					μ	s
		P	z′		0.1	0.5
	Ki	iP		10	49	58
	Sk	iP		10	50	27
	Bonin Islands (h ~ 450 km).					
» 6	Up	iP		12	16	45
	Ki	iP		12	15	53
		i		12	16	05
	Sk	iP		12	16	22
	Aleutian Islands.					
» 6	Up	iP		12	40	41 C
					μ	s
		P	z′		0.1	0.6
	Ki	iP		12	39	52
	Sk	iP		12	40	28 D
	Kurile Islands.					
» 6	Ki	iP		14	35	00 C
	Turkey.					
» 6	Ki	iP		15	01	29
	Java.					
» 7	Up	iP		05	20	52 C
		iPP		05	22	16
					μ	s
		P	z′		0.1	0.5
	△ = 4450 km = 40°.					
	Ki	iP		05	21	28 C
					μ	s
		P	z′		0.3	1.0
	Sk	iP		05	21	27
	Gb	iP		05	21	07
	Iran. Magn. = 6.3 (Up, Ki).					
» 7	Up	iP		22	27	16
					μ	s
		M	E		1.7	16
		M	N		1.6	14
		M	Z		1.8	17
	Ki	iP		22	28	21
					μ	s
		M	E		1.0	12
		M	N		0.5	16
	Gb	iP		22	27	19
	Turkey.					
» 8	Up	iP		01	45	03
		i		01	45	16

1959 Jan 8 (cont.)		iS		01	54	09
		i		01	54	49
					μ	s
		P	z′		0.2	1.0
		S	N		2.5	5
		M	E		1.6	20
		M	N		1.8	17
		M	Z		1.6	18
	△ = 7900 km = 71°.					
	Ki	iP		01	45	11
		i		01	46	04
		iS		01	54	27
					μ	s
		P	z′		0.4	1.0
		S	E		2.0	9
		S	N		2.6	9
		M	E		1.2	18
		M	N		1.0	19
	△ = 8100 km = 73°.					
	Sk	iP		01	44	50
		i		01	45	46
	Gb	iP		01	44	48
		i		01	45	43
	Windward Islands (h ~ 100 km). Magn. = 6.6 (Up, Ki). The phase nearly 1 min after P (Ki, Sk, Gb) could be the P of another shock in about the same location.					
» 8	Up	iP		08	32	07 C
» 8	Ki	eL		23	30	
					μ	s
		M	E		1.1	20
		M	N		0.6	19
		M	Z		1.3	19
	New Guinea.					
» 9	Up	iP		02	00	17
		i		02	00	25
					μ	s
		P	z′		0.1	0.5
		M	E		2.7	16
		M	N		1.4	16
		M	Z		1.3	15
	Ki	iP		02	01	31
		iLi		02	10	19
					μ	s
		M	E		3.0	17
		M	N		1.0	17
		M	Z		1.3	14
	Sk	iP		02	00	56
		i		02	01	04
	Gb	iP		02	00	08
		i		02	00	19
	Greece.					
» 9	Up	iP		02	15	43
	Ki	iP		02	15	15

1959 Jan 9 (cont.)					μ	s
		P	z′		0.1	1.0
	Mariana Islands.					
» 9	Ki	iP		18	15	16
	Turkey.					
» 10	Up				—	
					μ	s
		M	E		0.7	17
		M	N		0.9	17
		M	Z		1.2	17
	Ki	iP		01	42	30 C
	Rhodes Island.					
» 10	Up	iP		02	52	12
» 10	Ki	eP		05	36	00
» 10	Up	iPKP		09	37	22 D
	Ki	iPKP		09	37	04
	Kermadec Islands.					
» 10	Ki	i(P)		21	14	16
		iL		21	14	20
					μ	s
		L	z′		0.2	0.8
	Local blast?					
» 10	Ki	iP		22	04	52
	Mindanao.					
» 11	Up	iP		04	32	46
	Ki	iP		04	33	50
					μ	s
		P	z′		0.1	1.0
		M	E		1.1	11
		M	N		0.5	16
		M	Z		0.7	15
	Sk	iP		04	33	27
	Gb	iP		04	32	40
	Turkey.					
» 11	Up	iP		07	35	02
		ipP		07	35	53
		iPP		07	38	27
					μ	s
		P	z′		0.1	0.6
		pP	z′		0.2	1.0
	Ki	iP		07	34	52
		ipP		07	35	42
		iPP		07	38	08
		eS		07	45	02
		e		07	46	27
					μ	s
		pP	z′		0.6	1.5
		PP	z′		0.2	1.0
		S	E		1.0	10
		M	E		1.0	19
		M	N		0.6	20
	Sk	iP		07	34	45

1959						
Jan 11		ipP		07	35	36
(cont.)		iPP		07	37	53
	Gb	iP		07	34	50
		ipP		07	35	40
	Guatemala. h=210 km (Up, Ki, Sk, Gb). Magn.=6.2 (Up, Ki).					
» 11	Ki	iP		08	47	49
	Honshu, Japan.					
» 11	Up	iP		16	52	02
		i		16	52	06
	Ki	iP		16	52	00
	Sk	iP		16	52	28
	Sinkiang Province, China.					
» 12	Up	iP		06	11	57
		i(Sg)		06	12	38
» 12	Up	iP		14	27	22
		i		14	27	33
	Ki	iP		14	26	37
	Sk	eP		14	27	16
	Gb	eP		14	27	43
	Hokkaido, Japan (h ~ 100 km).					
» 13	Up			—		
				μ	s	
		M	E	2.5	19	
		M	N	1.9	18	
		M	Z	3.5	17	
	Ki	iP		01	28	29
				μ	s	
		M	E	2.4	18	
		M	N	2.1	20	
		M	Z	3.2	17	
	Mariana Islands. Magn.=5.8 (Up, Ki).					
» 13	Up	iP		07	31	55
				μ	s	
		P	Z′	0.1	1.0	
	Ki	iP		07	31	01
				μ	s	
		P	Z′	0.1	1.0	
	Sk	iP		07	31	33
	Gb	iP		07	32	10
	Aleutian Islands. Magn.=5.7 (Up, Ki).					
» 13	Ki	iP		07	46	26
				μ	s	
		P	Z′	0.1	1.0	
		M	N	0.9	19	
	Sk	eP		07	46	40
	Sumatra (h ~ 150 km).					
» 13	Up	iP		08	46	58
				μ	s	
		P	Z′	0.1	0.8	
		M	E	1.3	17	

1959						
Jan 13		M	N	1.2	22	
(cont.)		M	Z	1.6	18	
	Ki	iP		08	46	54
				μ	s	
		M	E	1.6	17	
		M	N	0.6	17	
		M	Z	1.2	17	
	Sk	iP		08	46	42
	Costa Rica (h ~ 100 km).					
» 13	Up	i(P)		09	17	03
» 13	Up	iP		09	49	27
	Ki	iP		09	49	47
				μ	s	
		P	Z′	0.1	1.2	
	Sk	eP		09	49	46
	Gb	iP		09	49	45
	Chagos Islands.					
» 13	Up	iP		14	43	01
		i		14	43	16
				μ	s	
		P	Z′	0.1	0.5	
	Ki	eP		14	42	13
	Sk	iP		14	42	51
	Kurile Islands.					
» 14	Ki	iP		04	33	27
	Turkey.					
» 14	Ki	iPKP		13	35	43
	Gb	iPKP		13	36	02
	Fiji Islands (h ~ 650 km).					
» 15	Up	iSg		15	29	31
		△=440 km=4.0°.				
	Sk	eSg		15	29	49
		△=510 km=4.6°.				
	Gb	iPg		15	27	53
		iSg		15	28	17
		△=200 km=1.8°.				
	South Norway, 59.3° N, 10.0°E.					
	Origin time=15 27 17.					
» 15	Up	iP		15	51	06
				μ	s	
		P	Z′	0.1	0.6	
	Ki	iP		15	50	38
				μ	s	
		P	Z′	0.1	1.3	
	Sk	iP		15	51	07 D
	Gb	iP		15	51	25
	Ryukyu Islands. Magn.=5.9 (Up, Ki).					
» 15	Up	iPKP		21	39	05 D
		i		21	39	26
		i		21	40	09
		iSKP		21	42	01
		iPP		21	42	19

1959						
Jan 15				μ	s	
(cont.)		PKP	Z′	0.9	0.6	
		△ ~ 15900 km ~ 143°.				
	Ki	ePKP		21	38	47
		iSKP		21	41	41
		i		21	41	59
				μ	s	
		SKP	Z′	0.5	0.9	
		△ ~ 15000 km ~ 135°.				
	Sk	iPKP		21	39	00
		i		21	39	57
		iSKP		21	41	56
	Gb	iPKP		21	39	09
		ipPKP		21	41	14
	Fiji Islands (h ~ 500 km).					
» 16	Up	iP		01	42	22 C
				μ	s	
		P	Z′	0.3	1.2	
		M	E	1.4	18	
		M	N	2.0	19	
		M	Z	2.4	20	
	Ki	iP		01	41	30
				μ	s	
		P	Z′	0.4	1.4	
		M	E	3.0	18	
		M	N	1.3	19	
		M	Z	3.9	19	
	Sk	iP		01	42	00
		iPcP		01	42	34
	Aleutian Islands (h ~ 60 km). Magn.= 6.2 (Up, Ki).					
» 16	Up	iP		17	01	29
		i		17	01	32
		i		17	01	42
				μ	s	
		M	E	1.5	17	
		M	N	2.0	20	
		M	Z	2.0	17	
	Ki			—		
				μ	s	
		M	E	1.6	16	
		M	N	1.3	16	
		M	Z	3.8	23	
	Sk	iP		17	01	02
	Queen Charlotte Islands.					
» 17	Ki	iP		08	00	33
	Rhodes Island.					
» 17	Up	iP		09	37	37
	Ki	iP		09	37	18
	Sk	iP		09	37	41
	Mindanao.					
» 17	Up	iP		10	28	26
	Ki	iP		10	27	38
	Kurile Islands.					
» 18	Up	iP		07	42	59
	Atlantic Ocean.					

1959						
Jan 18	Ki	iP		15	58	23
	Aleutian Islands.					
» 18	Up	ePKP		22	41	40
		iPKP		22	41	53
		iSKP		22	44	41
		i		22	45	52
		△ ~ 15200 km ~ 137°.				
	Ki	iPKP		22	41	37
		iSKP		22	44	15
				μ	s	
		SKP	Z′	0.2	1.0	
		△ ~ 14450 km ~ 130°.				
	Sk	iPKP		22	41	47
		iSKP		22	44	35
	Gb	iPKP		22	41	40
		iSKP		22	44	52
	Fiji Islands (h ~ 450 km).					
» 19	Up	iP		08	24	32
	Kyushu, Japan.					
» 19	Up	iP		20	33	47
» 20	Ki	iP		11	21	42
	Turkey.					
» 20	Ki	iP		20	47	13 C
	Turkey.					
» 21	Up	iP		11	20	19
		i		11	20	30
				μ	s	
		P	Z′	0.1	0.8	
	Ki	iP		11	20	01
				μ	s	
		M	E	1.5	13	
		M	Z	1.5	14	
	Luzon.					
» 21	Up	iP		14	06	46
				μ	s	
		P	Z′	0.1	0.8	
		M	E	1.5	19	
		M	N	2.5	20	
	Ki	iP		14	07	25
		i		14	07	34
				μ	s	
		P	Z′	0.1	1.3	
		M	E	1.5	18	
		M	N	1.3	15	
		M	Z	1.0	15	
	Sk	iP		14	07	17
	Socotra Island. Magn.=5.6 (Up, Ki).					
» 21	Up	iSn		15	22	49
		iSg		15	23	12
		△=420 km=3.8°.				
	Sk	eSg		15	23	21
	Gb	iPg		15	21	40
		iSg		15	22	02
		△=190 km=1.7°.				

1959
Jan 21
(cont.) South coast of Norway, 59¼°N, 10½°E. Origin time=15 21 06.

» 21	Up	iPg	15	31	31
		iSg	15	32	19
		i	15	33	30
		△=410 km=3.7°.			
	Sk	e(Sg)	15	32	57
		e	15	34	00
	Gb	iPg	15	30	49
		i	15	30	57
		iSg	15	31	10
		i	15	31	16
		△=180 km=1.6°.			

South coast of Norway, 59¼°N, 10½°E. Origin time=15 30 17.

» 21	Up	iPg	15	39	58
		iSg	15	40	46
		△=410 km=3.7°.			
	Sk	eSg	15	41	18
		△=520 km=4.7°.			
	Gb	iPg	15	39	16
		iSg	15	39	36
		△=180 km=1.6°.			

South coast of Norway, 59.2°N, 10.6°E. Origin time=15 38 43.

» 22	Ki	iP	04	43	33
	Sk	eP	04	43	09

Aegean Sea.

» 22	Up	iP	05	21	56C
		i	05	22	09
		i	05	23	55
		iPcS	05	26	15
		iS	05	31	18
		iSS	05	36	15

		μ	s
P	E	9.3	17
P	N	11	17
P	Z	37	17
P	Z′	0.5	1.0
S	E	45	21
S	N	31	19
M	E	210	18
M	N	210	18
M	Z	360	18

△=8100 km=73°.

	Ki	iP	05	21	16C
		i	05	21	30
		i	05	23	19
		iPP	05	23	34
		iS	05	29	56

		μ	s
P	E	9.8	16
P	N	4.3	14

1959
Jan 22
(cont.)

P	Z	16	14
P	Z′	0.9	1.5
PP	E	7.3	15
PP	Z	13	14
S	E	28	13
S	N	37	18
M	E	200	19
M	N	140	19
M	Z	220	18

△=7350 km=66°.

Sk	iP	05	21	49C
	i	05	22	24
	iPP	05	24	22
	iPcS	05	26	12
	△=7900 km=71°.			
Gb	iP	05	22	15
	iPP	05	25	08
	△=8450 km=76°.			

Honshu, Japan. Magn.=7.2 (Up, Ki).

» 22	Ki	iP	05	49	30

Halmahera.

» 22	Up	iP	07	44	17
		i	07	44	20

		μ	s
P	Z′	0.1	1.0

	Ki	eP	07	43	33
	Sk	iP	07	44	08

Hokkaido, Japan.

» 22	Up	iP	09	58	05D
		iPcP	09	58	21

		μ	s
P	Z′	0.1	1.0
M	E	1.6	18
M	N	0.9	17
M	Z	1.6	18

	Ki	iP	09	57	25
		iPP	10	00	00

		μ	s
P	Z′	0.1	1.0
M	E	1.1	17
M	N	0.8	16
M	Z	1.8	17

	Sk	iP	09	57	58
		i	09	58	08

Honshu, Japan. Magn.=5.7 (Up, Ki).

» 22	Up	iP	12	02	10
	Ki	iP	12	01	17

Kamchatka.

» 23	Ki	iP	00	00	58

Kamchatka.

» 23	Ki	iP	03	21	21C

Spitsbergen.

1959
Jan 23

	Ki	iP	07	10	46

Honshu, Japan.

» 23	Up	iP	07	29	53
	Ki	iP	07	29	00

Aleutian Islands.

» 23	Ki	iP	19	01	59

Alaska.

» 24	Up	iP	05	19	55C
		ipP	05	20	18
		i	05	22	04
		iS	05	29	13

		μ	s
P	Z	0.6	2
P	Z′	0.4	1.0
M	E	1.8	22
M	N	1.6	22
M	Z	2.4	20

	Ki	iP	05	19	17
		i	05	19	24
		ipP	05	19	40
		iPP	05	21	44
		iS	05	28	00

		μ	s
P	Z	0.7	7
P	Z′	0.4	1.1
PP	Z′	0.3	1.4
S	E	1.7	6
M	E	1.8	16
M	N	2.6	22
M	Z	1.9	20

	Sk	iP	05	19	50
		ipP	05	20	13
		iPP	05	22	22
	Gb	iP	05	20	21

Honshu, Japan. h=90 km (Up, Ki, Sk). Magn.=6.4 (Up, Ki).

» 24	Ki	iP	08	04	09

Borneo.

» 24	Up	iP	10	29	36
» 24	Up	ePKP	11	09	01

North Island, New Zealand (h ~ 170 km).

» 24	Up	iP	15	07	02D
	Sk	iP	15	07	46D

Greece.

» 24	Ki	iP	16	00	36

Rhodes Island.

» 24	Sk	iP	19	54	44

Mexico—Guatemala.

» 24	Up	iP	20	02	08
		ePP	20	03	25

1959
Jan 24
(cont.)

	iS	20	07	36

		μ	s
P	Z′	0.5	1.4
PP	E	2.7	13
PP	Z	1.6	5
S	E	5.7	13
S	N	2.3	10
M	E	11	16
M	N	10	15
M	Z	15	18

△=3900 km=35°.

	Ki	—		

		μ	s
P	Z′	1.2	2.1
M	E	13	13
M	N	6.5	13
M	Z	10	13

	Sk	iP	20	02	04
	Gb	iP	20	01	41

Azores Islands. Magn.=6.4 (Up, Ki).

» 26	Up	iP	11	43	55C

		μ	s
P	Z′	0.1	1.1

	Ki	iP	11	45	00

		μ	s
P	Z′	0.1	1.0

	Gb	iP	11	43	51

Turkey. Magn.=5.5 (Up, Ki).

» 26	Ki	iP	16	21	55

Turkey.

» 26	Up	iP	21	55	04

		μ	s
P	Z′	0.1	0.8

	Ki	iP	21	54	34
	Sk	iP	21	55	05
	Gb	iP	21	55	27C

Ryukyu Islands.

» 27	Ki	iP	00	31	45

Eastern Dominican Republic (h ~ 100 km).

» 27	Up	iP	03	38	49
		i	03	39	00
		iS	03	41	50

		μ	s
P	Z′	0.1	0.7
M	E	2.9	20
M	N	2.2	18
M	Z	2.8	16

△=1550 km=14°.

	Ki	iP	03	37	33
		i	03	37	41
		eT	03	43	55
		e	03	44	35

		μ	s
P	Z′	1.0	1.0
M	E	6.0	14

1959 Jan 27 (cont.)		M	N	1.7	10	
		M	Z	5.8	13	
	Sk	iP		03	37	50
		i		03	38	07
		iS		03	39	32
		△=1050 km=9½°.				
	Gb	iP		03	39	07
		i		03	39	15
	Northeast of Jan Mayen.					
» 27	Up	iP		06	56	29C
	Aleutian Islands.					
» 27	Ki	iP		21	18	19C
	Celebes Sea (h ~ 200 km).					
» 27	Up	iP		23	43	32C
				μ	s	
		P	z′	0.1	1.0	
	Gb	iP		23	43	56C
	Kamchatka.					
» 28	Up	iP		01	32	41
	Honshu, Japan.					
» 28	Up	iP		14	11	05C
				μ	s	
		P	z′	0.2	0.5	
	Sk	iP		14	11	03C
	Gb	iP		14	11	24
	Honshu, Japan (h ~ 550 km).					
» 28	Sk	e(P)		16	08	45
		e(Sg)		16	08	59
» 29	Up	iP		20	32	32
		iPcP		20	32	56
				μ	s	
		M	E	1.1	17	
		M	N	2.4	22	
		M	Z	1.8	21	
	Ki	eP		20	31	39
				μ	s	
		M	E	1.8	20	
		M	N	1.6	22	
		M	Z	2.1	21	
	Aleutian Islands.					
» 29	Up	iP		21	09	20C
		i		21	09	29
				μ	s	
		P	z′	0.1	0.5	
		M	N	1.2	22	
		M	Z	1.0	20	
	Ki	iP		21	08	29
		i		21	09	06
	Aleutian Islands.					
» 29	Up	iP		23	27	19D
		i		23	27	22
		iS		23	29	28

1959 Jan 29 (cont.)		i		23	30	05
		i!		23	30	15
				μ	s	
		P	z′	1.1	0.8	
		S	z′	0.7	0.5	
		M	E	17	6	
		M	N	27	10	
		M	Z	35	10	
		△=1300 km=11½°.				
	Ki	iP		23	25	56
		iS		23	27	04
		iS*		23	27	22
		i		23	35	58
				μ	s	
		P	E	3.4	9	
		P	N	3.7	9	
		P	Z	5.2	9	
		P	z′	2.0	1.0	
		S	E	14	9	
		S	N	18	9	
		S	Z	9.9	8	
		M	E	72	10	
		M	N	61	10	
		M	Z	75	8	
		△=600 km=5½°.				
	Sk	iP		23	26	21
		iS		23	27	46
		△=850 km=7½°.				
	Gb	iP		23	27	40
		iS		23	30	05
		i		23	30	40
		i		23	30	51
		△=1450 km=13°.				
	Off coast of Norway.					
» 30	Up	eL		01	13	
				μ	s	
		M	E	1.1	21	
		M	N	1.4	20	
		M	Z	1.7	20	
	Ki	eL		01	17	
				μ	s	
		M	E	2.0	21	
		M	N	1.8	19	
		M	Z	2.3	18	
	Solomon Islands.					
» 30	Up	iP		05	25	43
	Ki	iP		05	25	08
	Hudson Bay.					
» 30	Up	iP		13	52	16
	Pamir (h ~ 150 km).					
» 30	Up	iP		15	10	26
» 30	Up	iPKP		18	28	42
		iPKP		18	28	46D
		i		18	28	53
		i!		18	30	46

1959 Jan 30 (cont.)				μ	s	
		PKP	z′	0.5	0.5	
	Ki	iPKP		18	28	24C
		i		18	28	31
		i!		18	31	18
				μ	s	
		PKP	z′	0.2	0.7	
	Sk	iPKP		18	28	40
		i		18	29	05
		i!		18	31	32
	Gb	iPKP		18	28	47
		iPKP		18	28	55
		iPKP2		18	29	07
		i		18	30	59
	Kermadec Islands. PKP is multiple, the first phase with very small amplitude; this feature is most pronounced at Up and Gb.					
» 30	Up	iP		20	49	59
		i		20	50	01
		eS		20	58	56
				μ	s	
		P	N	0.2	2	
		P	Z	0.8	2	
		P	z′	0.4	1.0	
		S	E	1.3	7	
		S	N	0.7	6	
		M	E	19	18	
		M	N	15	21	
		M	Z	14	18	
		△=7550 km=68°.				
	Ki	iP		20	49	13
		i		20	49	17
		iS		20	57	39
				μ	s	
		P	z′	0.7	2.0	
		S	N	1.5	10	
		M	E	38	17	
		M	N	21	17	
		M	Z	14	19	
		△=6900 km=62°.				
	Sk	iP		20	49	50
	Gb	iP		20	50	23
		i		20	50	25
	Hokkaido, Japan. Magn.=6.4 (Up, Ki).					
» 30	Up	iP		22	27	49
		i		22	27	51
		iS		22	36	49
				μ	s	
		P	Z	0.6	2	
		P	z′	0.3	1.0	
		M	E	37	17	
		M	N	31	20	
		M	Z	23	19	
		△=7600 km=68½°.				
	Ki	iP		22	27	05
		i		22	27	17
		iS		22	35	28

1959 Jan 30 (cont.)				μ	s	
		P	z′	0.3	1.0	
		S	E	1.5	8	
		S	N	1.3	8	
		M	E	60	17	
		M	N	31	17	
		M	Z	26	20	
		△=6900 km=62°.				
	Sk	iP		22	27	41C
	Gb	iP		22	28	18
		i		22	28	20
	Hokkaido, Japan. Magn.=6.5 (Up, Ki).					
» 30	Up	iP		22	51	39
	Hokkaido, Japan.					
» 31	Up	iPKP		06	04	44
	Ki	iPKP		06	04	36
	Gb	iPKP		06	04	48
	Fiji Islands (h ~ 450 km).					
» 31	Up	iP		22	09	49D
	Kurile Islands.					
Feb 1	Up	iP		03	20	55C
				μ	s	
		P	z′	0.5	0.6	
	Ki	iP		03	21	02
				μ	s	
		P	z′	0.5	0.7	
	Sk	iP		03	21	21C
	Gb	iP		03	21	17C
	Hindu Kush (h ~ 250 km). Magn.=6.4 (Up, Ki).					
» 1	Ki	iP		04	28	15
	Ascension Island.					
» 1	Up	iP		06	41	09
	Ki	iP		06	40	15
	Sk	iP		06	40	45
	Gb	iP		06	41	24
	Aleutian Islands.					
» 2	Up	iPKP		03	39	31
				μ	s	
		PKP	z′	0.1	0.9	
	Gb	iPKP		03	39	44
	Fiji Islands (h ~ 350 km).					
» 2	Ki	iP		04	09	56
	Banda Sea (h ~ 150 km).					
» 2	Up	iP		19	26	07
		i		19	26	20
	Ki	iP		19	27	14
	Sk	iP		19	26	45D
	Gb	iP		19	25	54
	Crete.					

1959						
Feb	3	Ki	iP	10	44	01
		Outer Mongolia.				
»	3	Ki	ePKP	23	42	46
		North Island, New Zealand (h ~ 100 km).				
»	4	Up	iP	00	17	37
			i	00	17	49
		Aleutian Islands.				
»	4	Gb	iPKP	08	54	48C
		Fiji Islands.				
»	5	Up	iP	01	15	11C
				μ	s	
			P z′	0.5	1.0	
		Ki	iP	01	14	16C
				μ	s	
			P z′	0.9	1.0	
		Sk	iP	01	14	44
		Gb	iP	01	15	27C
		Alaska (h ~ 100 km). Magn. = 6.6 (Up, Ki).				
»	5	Up	iP	10	17	15
				μ	s	
			P z′	0.1	0.7	
		Ki	iP	10	16	36C
				μ	s	
			P z′	0.1	1.0	
		Gb	iP	10	17	37D
		Honshu, Japan. Magn. = 5.9 (Up, Ki)				
»	6	Up	iP	05	29	37
		Molucca Passage.				
»	6	Up	iP	07	30	31
		Hokkaido, Japan.				
»	6	Up	iP	14	44	01
			i	14	44	04
			iP′P′	15	12	28
				μ	s	
			P z′	0.1	0.7	
			P′P′ z′	0.4	2.0	
			M N	4.8	22	
			M Z	7.4	21	
		Ki	iP	14	43	10
				μ	s	
			M E	3.3	19	
			M N	2.0	20	
			M Z	5.3	21	
		Gb	iP	14	44	19
		Aleutian Islands (h ~ 60 km). Magn. = 5.8 (Up, Ki).				
»	7	Up	iP	03	30	27
		Ki	iP	03	30	30
»	7	Up	iP	09	50	29C
			i	09	54	11

1959						
Feb	7		iPP	09	54	24
(cont.)			iSKS	10	01	02
			iPS	10	03	18
			iPKKP	10	07	04
				μ	s	
			P E	2.8	18	
			P Z	14	18	
			P Z′	0.3	1.2	
			PP E	3.0	9	
			PP Z	6.8	10	
			PP Z′	1.8	2.7	
			SKS E	5.8	9	
			M E	45	22	
			M N	17	20	
			M Z	80	23	
			△ = 10900 km = 98°.			
		Ki	iP	09	50	30C
			i	09	54	00
			iPP	09	54	26
			i	09	57	02
			iSKS	10	01	07
			iPS	10	03	22
			iPKKP	10	07	04
				μ	s	
			P E	2.5	12	
			P Z	6.6	10	
			P Z′	2.3	2.5	
			PP E	3.5	11	
			PP Z	4.8	9	
			PP Z′	0.9	1.8	
			SKS E	16	10	
			SKS N	4.6	10	
			M E	38	22	
			M N	19	21	
			M Z	38	22	
			△ = 10900 km = 98°.			
		Sk	iP	09	50	17C
			i	09	53	11
			iPP	09	54	03
			iPKKP	10	07	16
		Gb	iP	09	50	19
			i	09	53	56
			iPP	09	54	23
		Peru. Magn. = 7.1 (Up, Ki).				
»	7	Up	iP	10	24	55
		Ki	iP	10	24	28
		Mariana Islands.				
»	7	Up	iP	11	03	49
		Ki	iP	11	04	06
		Atlantic Ocean.				
»	7	Up	iP	15	10	05D
»	7	Up	iP	20	13	17
			i	20	13	25
			i	20	14	17
			iS	20	17	19

1959						
Feb	7			μ	s	
(cont.)			P z′	0.2	0.7	
			M N	0.8	15	
			M Z	0.8	10	
			△ = 2500 km = 22½°.			
		Ki	eP	20	14	36
				μ	s	
			M E	1.4	17	
			M N	0.9	20	
		Sk	iP	20	13	56
		Gb	iP	20	13	01
			i	20	13	07
		Greece.				
»	8	Up	iP	01	08	19
			eS	01	12	58
				μ	s	
			P Z	0.3	3	
			P Z′	0.7	1.0	
			S E	1.4	10	
			M E	5.2	18	
			M N	4.5	17	
			M Z	7.0	17	
			△ = 3100 km = 28°.			
		Ki	iP	01	08	41
			i	01	08	46
			eS	01	13	41
				μ	s	
			P Z	1.2	4	
			P Z′	1.2	2.5	
			S N	0.6	10	
			M E	3.0	18	
			M N	2.0	15	
			M Z	2.9	20	
			△ = 3400 km = 30½°.			
		Sk	iP	01	08	04
		Gb	iP	01	07	50D
		North Atlantic Ocean. Magn. = 5.6 (Up, Ki).				
»	8	Up	iP	05	56	41
		Honshu, Japan.				
»	8	Up	iPKP	06	04	38
			i	06	04	41
		Ki	iPKP	06	04	31
			iSKP	06	07	08
		Sk	iPKP	06	04	40
			i	06	05	18
			iSKP	06	07	20
		Gb	iPKP	06	04	46
		South of Fiji Islands (h ~ 600 km).				
»	8	Up	iP	16	12	32
			i	16	12	42
		Ki	iP	16	11	39
		Gb	iP	16	12	56
		Kamchatka.				
»	8	Up	iPKP	16	13	50
			i	16	13	56
		Gb	iPKP	16	14	01
		Kermadec Islands (h ~ 100 km).				

1959						
Feb	9	Up	iP	04	53	46D
			eS	05	02	52
				μ	s	
			P Z	2.1	6	
			P Z′	0.2	0.5	
			S N	1.1	9	
			M E	3.2	20	
			M N	2.3	21	
			M Z	3.5	20	
			△ = 7800 km = 70°.			
		Ki	iP	04	52	54
			i	04	53	05
				μ	s	
			P Z′	0.3	1.0	
			M E	2.2	20	
			M N	2.5	22	
			M Z	2.9	22	
		Sk	iP	04	53	26
		Gb	iP	04	53	59
		Aleutian Islands. Magn. = 6.3 (Up, Ki).				
»	9	Up	i(pPKP)	21	32	24
		Gb	e(pPKP)	21	32	23
		(Solomon Islands; h ~ 100 km).				
»	10	Up	iP	23	09	02
		Gb	eP	23	09	29
		India-Burma.				
»	11	Up	eP	03	56	52
		Ki	eP	03	56	37
		Mindanao.				
»	11	Up	iP	14	05	08
			i	14	05	14
		Sk	iP	14	04	50
		Oaxaca, Mexico.				
»	11	Up	e(P*)	17	09	16
			iPg	17	09	29
			i(S*)	17	11	18
			i	17	11	22
			i	17	11	28
			i	17	11	36
			eSg	17	12	01
			△ = 1150 km = 10.3°.			
		Ki	iPg	17	07	51C
			iSg	17	08	52
				μ	s	
			Sg z′	0.2	0.5	
			△ = 510 km = 4.6°.			
		Sk	iPg	17	08	20
			i	17	09	35
			iSg	17	09	39
			△ = 680 km = 6.1°.			
		Gb	eSg	17	12	46
			△ = 1300 km = 11.7°.			
		Atlantic Ocean off northern coast of Norway, 69.6°N, 8.8°E. Origin time = 17 06 19.				

1959						
Feb 11	Ki	e		20	41	15
		eSg		20	41	22
	Kiantajärvi, Finland (after E. Penttilä, Univ. of Helsinki, Publ. in Seismology, 40, 1960).					
» 12	Gb	iPKP		00	20	40
	(Fiji Islands).					
» 12	Up	iP		09	27	07
	Ki	eP		09	26	15
	Aleutian Islands.					
» 12	Up	iP		18	09	54
	Ki	iP		18	09	38
				μ	s	
		P	z′	0.1	1.0	
	Mindanao.					
» 13	Up	iPKP		02	04	12C
		i		02	04	31
				μ	s	
		PKP	z′	0.2	0.5	
	Gb	iPKP		02	04	26
	Southwest of Tonga Islands.					
» 13	Up	i(P)		16	16	27
» 14	Up	eL		05	24	
				μ	s	
		M	N	1.0	18	
	Ki	eL		05	21	
				μ	s	
		M	N	2.3	27	
	Flores Sea.					
» 14	Up	i(P)		11	12	05
» 14	Ki	i(Pg)		12	45	11
	Kiantajärvi, Finland (after E. Penttilä, Univ. of Helsinki, Publ. in Seismology, 40, 1960).					
» 14	Up	iP		22	20	59
		i		22	21	08
				μ	s	
		P	z′	0.2	0.8	
	Ki	iP		22	20	48C
				μ	s	
		P	z′	0.1	1.0	
	Sk	iP		22	21	14
	Gb	iP		22	21	15
	India-Burma. Magn. = 6.1 (Up, Ki).					
» 14	Up	iP		22	36	05C
		i!		22	36	10
				μ	s	
		P	z′	0.9	1.0	
	Ki	iP		22	35	55
				μ	s	
		P	z′	0.4	1.0	

1959						
Feb 14	Sk	iP		22	36	19C
(cont.)	Gb	iP		22	36	20
	India-Burma. Magn. = 6.6 (Up, Ki).					
» 14	Up	iP		22	58	42
	Ki	eP		22	58	32
	India-Burma.					
» 15	Up	iP		04	10	14D
		i		04	10	20
		iLgl		04	24	05
		i		04	24	35
				μ	s	
		P	z′	0.2	0.7	
	Ki	eP		04	10	01
		i		04	10	10
	Sk	iP		04	10	30
		i		04	10	36
	Sinkiang Province, China.					
» 15	Up	iPKP		04	18	23
				μ	s	
		M	E	7.5	19	
		M	N	6.0	21	
		M	Z	6.6	19	
	Ki			—		
				μ	s	
		M	E	6.2	17	
		M	N	8.7	17	
		M	Z	12	17	
	Sandwich Islands. Magn. = 6.5 (Up, Ki).					
» 15	Up	iPKP		05	01	32
		i		05	01	42
		i		05	01	52
				μ	s	
		PKP	z′	0.1	0.8	
		M	E	13	19	
		M	N	15	21	
		M	Z	15	20	
	Ki	iPKP		05	01	49
				μ	s	
		M	E	15	18	
		M	N	18	17	
		M	Z	26	17	
	Sandwich Islands. Magn. = 6.8 (Up, Ki).					
» 15	Up	iP		05	53	31C
		i		05	53	34
				μ	s	
		P	z′	0.1	0.6	
	Ki	iP		05	54	29
		i		05	54	34
	Gb	iP		05	53	25
	Turkey.					
» 15	Up	eP		20	06	20
	Ki	iP		20	06	24
» 16	Up	iPKP		08	13	04D
		i		08	13	22

1959						
Feb 16				μ	s	
(cont.)		PKP	z′	0.2	0.6	
	Ki	iSKP		08	15	38
	Gb	iPKP		08	13	08
	South of Fiji Islands (h ~ 500 km).					
» 16	Up	iP		18	07	00
	Nicaragua.					
» 17	Up	iP		12	14	12
		i		12	14	16
		iP′P′		12	42	16
		i		12	42	19
				μ	s	
		P	N	0.4	2	
		P	Z	1.2	2	
		P	z′	0.7	1.2	
		M	E	5.3	22	
	Ki	iP		12	13	20D
				μ	s	
		P	z′	0.4	1.1	
	Sk	iP		12	13	50
	Aleutian Islands. Magn. = 6.4 (Up, Ki).					
» 17	Up	iP		13	01	12C
		i		13	01	29
		i(pP)		13	01	32
				μ	s	
		P	z′	0.1	0.5	
	Ki	iP		13	00	38
		i(pP)		13	00	59
				μ	s	
		P	z′	0.1	1.0	
	Sk	iP		13	01	08
		i(pP)		13	01	28
	Honshu, Japan. Magn. = 6.0 (Up, Ki).					
» 17	Up	iP		16	01	06
	Ki	iP		16	00	12
	Alaska.					
» 17	Ki	eP		20	20	09
	Canada.					
» 18	Up	iPKP		02	15	56
		iSKP		02	18	53
	Gb	iPKP		02	16	08
	South of Fiji Islands (h ~ 500 km).					
» 18	Up	iP		06	15	05
	Aleutian Islands.					
» 18	Up	iP		12	16	30
	Ki	iP		12	15	47
	Hokkaido, Japan.					
» 19	Up	iP		19	14	21
» 19	Up	i(P)		20	38	48

1959						
Feb 19				μ	s	
(cont.)		(P)	z′	0.1	0.5	
» 19	Ki	eP		21	22	05
	Alaska.					
» 20	Up	iP		03	25	57C
	Kurile Islands.					
» 20	Up	iP		04	37	25
	Kurile Islands.					
» 20	Up	iP		07	17	31
	Corfu Island.					
» 20	Up	iP		18	28	52
				μ	s	
		P	z′	0.2	1.0	
	Ki	iP		18	28	42
				μ	s	
		P	z′	0.4	1.3	
	Guatemala (h ~ 150 km). Magn. = 6.2 (Up, Ki).					
» 20	Ki	iP		18	49	20
» 20	Ki	i(P)		21	12	12
		i(L)		21	12	17
				μ	s	
		(L)	z′	0.2	1.3	
	Seismic?					
» 21	Up	iP		08	39	49
		i		08	40	25
				μ	s	
		P	z′	0.1	0.6	
	Ki	iP		08	39	32D
	Luzon.					
» 22	Up	iP		03	40	37C
	Tibet.					
» 22	Ki	iP		09	02	07
	West Pakistan.					
» 22	Ki	iP		10	40	06
	Banda Sea.					
» 23	Up	iP		00	07	09D
	Ki	iP		00	06	23
	Kurile Islands.					
» 23	Up	eL		02	53	
				μ	s	
		M	E	1.6	20	
		M	N	2.6	21	
		M	Z	3.5	20	
	Ki	eL		02	56	
				μ	s	
		M	E	1.8	20	
		M	N	1.3	19	

1959
Feb 23 M z 2.4 20
(cont.) New Britain. Magn. = 6.0 (Up, Ki).

» 23 Up iP 10 41 35 D
i 10 41 43
i 10 42 07
μ s
P z′ 0.2 0.6
Ki iP 10 40 42 D
μ s
P z′ 0.2 1.0
Sk iP 10 41 19 C
Gb iP 10 41 56 D
i 10 42 02
Kamchatka (h ~ 100 km). Magn. = 6.2 (Up, Ki).

» 23 Up iP 12 04 35 C
Kurile Islands.

» 23 Up iP 16 15 34 D
μ s
P z′ 0.1 0.8
M E 1.8 23
M N 2.2 18
M z 3.0 21
Ki iP 16 14 43
μ s
P z′ 0.2 1.0
M E 2.2 20
M N 1.3 16
M z 1.9 16
Sk iP 16 15 20
i 16 15 32
Gb iP 16 15 54
Kurile Islands. Magn. = 5.8 (Up, Ki).

» 23 Up iPKP 22 40 43 D
i 22 40 55
μ s
PKP z′ 0.2 0.8
Ki iPKP 22 40 34
Sk iPKP 22 40 36 D
Gb iPKP 22 40 57 D
Kermadec Islands.

» 24 Up iP 12 58 25 D
Ki iP 12 58 09 D
Panay Island, Philippine Islands (h ~ 100 km).

» 25 Up i(Sg) 10 57 50
μ s
(Sg) z′ 0.1 0.5

» 25 Up iP 11 30 20 C
μ s
P z′ 0.1 0.5
Ki iP 11 29 49

1959
Feb 25 μ s
(cont.) P z′ 0.2 1.0
Sk iP 11 30 18
iPP 11 33 25
Gb iP 11 30 38
Honshu, Japan (h ~ 550 km). Magn. = 5.5 (Up, Ki).

» 25 Up i(Sg) 11 55 14

» 25 Up i(Sg) 13 25 05

» 25 Up i(Sg) 13 56 54
μ s
(Sg) z′ 0.1 0.5

» 25 Gb iP 15 14 23
i 15 14 25
Local? Seismic?

» 25 Up iP 15 41 31

» 25 Ki iP 20 21 31 C
Ceram Sea (h ~ 200 km).

» 26 Up iP 01 54 23
Ryukyu Islands.

» 26 Up iP 14 23 14
Ki iP 14 24 25
Crete.

» 26 Up iP 20 10 20

» 27 Gb iPKP 15 40 03
Tonga Islands.

» 27 Up iP 21 08 22 C
μ s
P z′ 0.7 1.0
M E 6.1 21
M N 2.9 18
M z 8.7 20
Ki iP 21 07 52 C
μ s
P z′ 0.4 0.9
M N 2.3 17
Sk iP 21 08 22
i(pP) 21 08 40
Gb iP 21 08 44 C
i(pP) 21 09 00
Ryukyu Islands. Magn. = 6.5 (Up, Ki).

» 28 Up iP 01 43 22
Ki iP 01 42 30
i 01 42 40
μ s
P z′ 0.1 1.0
Sk iP 01 42 59
Gb iP 01 43 39
Aleutian Islands.

1959
Feb 28 Up ePKP 12 04 07
Ki iPKP 12 04 04
West of Macquarie Island.

» 28 Up iPKP 13 44 45
i 13 44 54
South of Fiji Islands.

» 28 Up iP 16 29 25
Sk iP 16 30 08
Albania.

Mar 1 Ki eP 00 21 27
Arctic Ocean.

» 1 Ki iP 00 28 52

» 1 Up iP 00 34 53
i 00 35 20
i(S) 00 38 02
μ s
M E 8.4 21
M N 12 21
M z 16 22
△ ~ 1650 km ~ 15°.
Ki iP 00 33 15
i 00 33 19
i 00 34 39
iS 00 34 57
i(T) 00 39 16
i 00 39 54
μ s
P z′ 0.3 0.9
S E 3.2 7
M E 12 14
M N 10 17
M z 11 16
△ = 900 km = 8°.
Sk eP 00 34 03
i 00 34 06
i 00 34 20
e(T) 00 42 01
Gb iP 00 35 26
Arctic Ocean. The first P waves at Ki and Sk are of very low amplitudes, followed after 3—4 sec by waves of much larger amplitudes.

» 1 Up iP 17 03 11
i 17 03 22
i 17 06 49
iPP 17 07 32
eSKS 17 13 46
μ s
P z′ 0.1 1.0
PP E 2.0 6
PP z 2.9 6
PP z′ 1.4 2.5
SKS E 1.2 6
SKS N 1.2 5

1959
Mar 1 M E 47 21
(cont.) M N 71 25
M z 70 24
△ ~ 11650 km ~ 105°.
Ki iP 17 02 53
e 17 14 36
ePS 17 15 51
μ s
M E 55 20
M N 29 20
M z 62 23
Gb iP 17 03 34
e 17 07 09
iPP 17 08 07
New Guinea (h ~ 100 km). Magn. = 7.1 (Up).

» 1 Up iP 19 12 24

» 1 Up eP 20 00 56
Ki iP 20 02 03
Gb eP 20 00 48
Turkey.

» 1 Up iP 21 07 03
i 21 07 05
μ s
P z′ 0.1 0.5

» 1 Up iP 21 20 26 C

» 1 Up iP 22 54 15
Ki eP 22 53 22
Aleutian Islands.

» 2 Up eP 01 51 00
i 01 51 11
iPP 01 54 51
Ki iP 01 51 10
μ s
P z′ 0.3 1.5
Sumatra.

» 2 Up iP 02 00 03

» 2 Up iP 09 41 25

» 2 Up eP 11 29 25
Ki iP 11 30 02
Sk i 11 29 44
Gb iP 11 29 33
Iran.

» 2 Ki i(P) 12 21 39

» 2 Up iP 15 59 04 C
i 15 59 13
iPP 16 00 39
i(sPP) 16 01 43
iSS 16 07 57

1959 Mar 2 (cont.)				μ	s	
		P	z	1.2	2	
		P	z′	0.4	0.5	
		PP	z′	0.4	1.0	
	Ki	iP		15	59	13C
		i		15	59	20
				μ	s	
		P	z′	2.0	1.4	
	Sk	iP		15	59	29C
		iPP		16	01	14
	Gb	iP		15	59	26C
		ipP		16	00	13
		isP		16	00	36
		iPP		16	01	11
		△=4800 km=43°.				
		Hindu Kush. h=230 km(Gb).				
		Magn.=6.3 (Up, Ki).				
» 2	Up	iP		19	29	44
» 2	Ki	iSg		20	18	22
		Puolanka, Finland (after E. Penttilä, Univ. of Helsinki, Publ. of Seismology, 40, 1960).				
» 3	Ki	eP		21	37	45
		iPP		21	38	46
		Caucasus.				
» 4	Up	iP		01	03	29C
				μ	s	
		P	z′	0.2	1.0	
	Ki	iP		01	02	37
				μ	s	
		P	z′	0.3	1.0	
	Sk	iP		01	03	13
	Gb	iP		01	03	51C
		Kamchatka. Magn.=6.2 (Up, Ki).				
» 4	Up	iP		20	09	25D
		i		20	09	37
				μ	s	
		P	z′	0.3	0.8	
	Ki	iP		20	09	26D
				μ	s	
		P	z′	0.1	1.0	
	Sk	iP		20	09	42D
		i		20	09	55
	Gb	iP		20	09	41
		Andaman Islands. Magn.=6.1 (Up, Ki).				
» 4	Up	iP		23	11	50D
				μ	s	
		P	z′	0.1	1.0	
	Ki	iP		23	11	12D
				μ	s	
		P	z′	0.1	1.0	
	Sk	iP		23	11	45D
		iPP		23	14	14
		Honshu, Japan (h ~ 200 km). Magn.= 5.7 (Up, Ki).				

1959 Mar 5	Up	iP		00	25	34D
		iPcP		00	26	14
				μ	s	
		M	N	1.2	22	
		M	z	1.4	20	
	Ki	iP		00	24	40
	Sk	iP		00	25	17
	Gb	iP		00	25	59
		Kamchatka.				
» 5	Up	iP		05	15	12
		i		05	15	20
		Kurile Islands.				
» 5	Up	i(Sg)		05	55	52
» 5	Sk	ePKP		06	02	56
		Kermadec Islands.				
» 5	Up	iP		14	20	42D
				μ	s	
		P	z′	0.1	0.5	
	Ki	iP		14	19	56
	Sk	iP		14	20	31
	Gb	iP		14	21	01
		Kurile Islands (h ~ 100 km).				
» 5	Up	iPKP		16	48	44D
	Sk	iPKP		16	48	33
		Kermadec Islands.				
» 5	Up	iP		23	07	58
		i		23	08	05
		i		23	08	11
				μ	s	
		P	z′	0.1	0.5	
	Ki	iP		23	07	59
		i		23	08	10
				μ	s	
		P	z′	0.2	1.0	
	Sk	iP		23	08	14
		i		23	08	27
	Gb	eP		23	08	31
		i		23	08	46
		Sumatra (h ~ 100 km).				
		Magn.=6.3 (Up, Ki).				
» 6	Sk	ePKP		21	00	52
		Solomon Islands.				
» 7	Ki	iP		00	40	07
		iSg		00	41	15
» 7	Up	iP		03	52	45
		i		03	53	14
» 7	Ki	i(P)		08	55	01
» 7	Ki	iP		09	25	27
	Sk	iP		09	25	45
		Sumatra (h ~ 100 km).				

1959 Mar 7	Up	iP		15	53	13
	Ki	iP		15	52	21
	Gb	iP		15	53	28
		Alaska.				
» 8	Up	iP		07	08	21
» 8	Up	iP		11	21	42
	Sk	iP		11	22	25
	Gb	iP		11	21	33
		Albania.				
» 8	Up	i(PP)		14	56	16
	Ki	ePP		14	57	10
	Gb	iPP		14	56	51
		Iran (h ~ 60 km).				
» 9	Ki	iP		07	22	43D
		Aegean Sea.				
» 9	Up	iP		10	30	54
	Ki	iP		10	30	35
		Samar, Philippine Islands.				
» 9	Up	iP		18	55	31
		ipP		18	55	47
				μ	s	
		pP	z′	0.3	1.5	
	Ki	iP		18	54	50C
		ipP		18	55	05
	Sk	eP		18	55	24
		ipP		18	55	38
	Gb	iP		18	55	54
		Honshu, Japan. h=60 km (Up, Ki, Sk).				
» 9	Up	eP		22	15	26
		ipP		22	16	08
	Sk	iP		22	15	06C
		ipP		22	15	48
	Gb	iP		22	15	17
		ipP		22	16	01
		Guatemala. h=170 km (Up, Sk, Gb).				
» 10	Up	iP		07	10	55
		Honshu, Japan.				
» 10	Up	iP		13	17	22
		i		13	17	47
» 10	Up	iPn		15	16	46
		iP*		15	16	50
		iPg		15	16	52
		iSn		15	17	15
		iS*		15	17	31
		iSg		15	17	36
				μ	s	
		Pg	z′	0.1	0.5	
		Sg	z′	0.1	0.5	
		△=330 km=3.0°				

1959 Mar 10 (cont.)	Sk	e(Sg)		15	19	48
		Near coast of Baltic States. Origin time=15 15 55. Seismic?				
» 10	Up	iP		18	00	08
		i		18	00	14
	Ki	iP		18	00	50
	Sk	iP		18	00	32
	Gb	e(P)		18	00	15
		Rhodesia-Mozambique.				
» 11	Up	iP		03	10	31
	Ki	iP		03	10	16
	Sk	iP		03	10	42
		Szechwan Province, China.				
» 11	Up	i		07	21	43
		iSg		07	21	47
		△=780 km=7.0°.				
	Ki	iPg		07	18	48
		iSg		07	19	23
		△=290 km=2.6°.				
	Sk	ePn		07	18	47
		ePg		07	18	59
		iSg		07	19	40
		△=360 km=3.2°.				
		Nordlands Fylke, Norway, 66.8°N, 14.3°E. Origin time=07 17 55.				
» 11	Up	iPn		13	23	06
		iPg		13	23	11
		iSg		13	23	58
				μ	s	
		Pg	z′	0.1	0.5	
		Sg	z′	0.1	0.5	
		△=360 km=3.2°.				
	Sk	e		13	26	02
		iSg		13	26	15
	Gb	iSn		13	24	26
		iSg		13	24	51
		△=530 km=4.8°.				
		Near coast of Baltic States, 57°N, 21°E. Origin time=13 22 12. Seismic?				
» 12	Up	iPP		01	47	15
				μ	s	
		M	E	3.6	19	
		M	N	3.7	17	
		M	z	3.9	20	
	Ki	eP		01	42	43
		e		01	55	07
				μ	s	
		M	E	2.0	16	
		M	N	2.0	20	
		M	z	2.3	18	
		Caroline Islands. Magn.=6.0 (Up, Ki).				

1959						
Mar 12	Up	iP		05	02	53
	Ki	iP		05	04	00
Crete.						
» 12	Up	iP		06	43	45C
		i		06	53	21
				μ	s	
		P	z′	0.1	0.7	
	Sk	iP		06	44	17
		i!		06	44	26
Ionian Islands.						
» 12	Sk	i(P)		21	33	51
» 13	Up	iP		00	51	47
		i		00	52	08
	Ki	iP		00	52	59
	Sk	iP		00	52	28
	Gb	iP		00	51	33
Greece.						
» 13	Up	iPKP		01	02	08
		i		01	02	15
				μ	s	
		PKP	z′	0.1	0.5	
	Ki	iPKP		01	01	53
	Sk	iPKP		01	02	03
Kermadec Islands.						
» 13	Up	iP		15	45	12
	Ki	eP		15	45	12
	Gb	iP		15	44	55
Haiti.						
» 13	Up	iPKP		16	59	16
	Gb	iPKP		16	59	24
Tonga Islands (h ~ 200 km).						
» 13	Up	iP		19	13	40
				μ	s	
		M	E	0.8	18	
		M	Z	1.3	16	
	Ki	iP		19	14	47C
				μ	s	
		M	E	0.5	12	
		M	N	0.7	12	
	Sk	iP		19	14	19
	Gb	eP		19	13	30
Mediterranean Sea, near Crete.						
» 13	Up	i(P)		20	03	04C
» 14	Up	iP		03	06	31D
				μ	s	
		M	E	1.8	19	
		M	N	1.1	22	
		M	Z	1.1	23	
	Ki	iP		03	05	43
				μ	s	
		M	E	2.2	17	
		M	N	1.2	17	

1959						
Mar 14		M	Z	1.3	21	
(cont.)	Sk	eP		03	06	19
	Gb	iP		03	06	53D
Kurile Islands.						
» 14	Up	iSn		03	34	24
		iSg		03	35	15
		△=890 km=8.0°.				
	Ki	e		03	34	23
		eSg		03	34	34
		△=730 km=6.6°.				
	Sk	ePg		03	32	11
		iSg		03	32	58
		△=400 km=3.6°.				
	Gb	eSg		03	35	34
		△=930 km=8.4°.				
Atlantic Ocean, off coast of Norway, 65.5°N, 5.0°E. Origin time=03 30 55.						
» 14	Ki	iPKP		07	15	26
	Gb	ePKP		07	15	48
New Hebrides Islands (h ~ 500 km).						
» 14	Up	iP		22	46	53
» 15	Up	i(Sn)		02	57	39
		iSg		02	58	08
		△=680 km=6.1°.				
	Ki	eSg		02	59	17
		△=910 km=8.2°.				
	Sk	iPg		02	55	55
		iSg		02	56	39
		△=380 km=3.4°.				
	Gb	iSg		02	57	45
		△=600 km=5.4°.				
Near Ålesund on the coast of Norway, 62.2°N, 6.0°E. Origin time=02 54 47.						
» 15	Sk	eP		04	55	14
» 16	Up	iP		01	47	48
	Gb	eP		01	47	57
South of Unimak Island.						
» 16	Up	iP		08	13	13
	Sk	iP		08	13	07
	Gb	iP		08	13	38
Kurile Islands.						
» 16	Up	iPKP		22	27	53
		i(pPKP)		22	28	32
	Gb	iPKP		22	28	04C
Kermadec Islands (h ~ 100 km).						
» 16	Up	iP		23	45	41D
	Ki	iP		23	44	48D
	Gb	iP		23	45	58
Aleutian Islands (h ~ 60 km).						

1959						
Mar 17	Up	iP		08	37	15D
		i!		08	37	29
		i		08	37	39
				μ	s	
		P	z′	0.5	1.0	
	Ki	iP		08	36	46
		i!		08	36	59
				μ	s	
		P	z′	0.4	1.0	
	Sk	iP		08	37	16
		i!		08	37	30
	Gb	iP		08	37	36D
		i!		08	37	50
Ryukyu Islands. Magn.=6.5 (Up, Ki).						
» 17	Up	iP*		12	23	04
		iPg		12	23	06
		iS*		12	23	45
		iSg		12	23	50
				μ	s	
		Pg	z′	0.1	0.5	
		Sg	z′	0.1	0.5	
		△=380 km=3.4°.				
	Sk	eSg		12	26	12
	Gb	eSg		12	24	45
Near coast of Baltic States, 57°N, 21°E. Origin time=12 22 00. Seismic?						
» 17	Up	iPKP		13	17	49
	Ki	iPKP		13	18	06
		i		13	18	19
Sandwich Islands.						
» 17	Up	iP		19	14	05
		i		19	14	21
	Ki	eP		19	14	08
		i		19	14	17
	Gb	eP		19	14	12
Sumatra.						
» 17	Up	iP		22	03	35
	Ki	iP		22	02	24
				μ	s	
		P	z′	0.3	1.0	
	Sk	iP		22	02	35D
	Gb	iP		22	03	51
		i		22	03	58
Jan Mayen Island.						
» 18	Up	iP		00	53	16D
		i		00	53	28
		iS		01	03	04
				μ	s	
		P	z′	0.1	1.0	
		M	E	3.2	21	
		M	N	5.7	23	
		M	Z	5.4	17	
		△=8600 km=77½°.				
	Ki	iP		00	52	47

1959						
Mar 18				μ	s	
(cont.)		P	z′	0.1	1.1	
		M	E	3.7	20	
		M	N	2.9	17	
		M	Z	3.2	16	
	Sk	iP		00	53	17
		i		00	53	28
	Gb	iP		00	53	39D
Ryukyu Islands. Magn.=5.9 (Up, Ki).						
» 18	Up	iP		07	38	08
	Ki	iP		07	37	51
	Gb	iP		07	38	32
Honshu, Japan (h ~ 100 km).						
» 18	Up	iP*		07	44	50
		iPg		07	44	56
		iSg		07	45	41
				μ	s	
		Pg	z′	0.1	0.5	
		Sg	z′	0.1	0.5	
		△=380 km=3.4°.				
	Ki	eSn		07	48	21
		eSg		07	49	34
		△=1160 km=10.4°.				
	Sk	e(Sn)		07	47	20
		eSg		07	47	59
		△=840 km=7.6°.				
	Gb	eSg		07	46	37
		△=570 km=5.1°.				
Near coast of Baltic States, 57.4°N, 21.3°E. Origin time=07 43 49. Seismic?						
» 18	Up	iP		13	37	54
				μ	s	
		P	z′	0.1	0.7	
» 19	Up	iP		01	52	49
				μ	s	
		P	z′	0.1	0.5	
	Sk	iP		01	53	28
	Gb	iP		01	52	39
Greece.						
» 19	Up	iP		07	36	17D
				μ	s	
		P	z′	0.1	1.0	
	Gb	iP		07	36	37
Ryukyu Islands.						
» 19	Up	iP		08	33	27
		i		08	33	30
		i		08	33	35
				μ	s	
		P	z′	0.2	0.5	
	Ki	iP		08	33	55D
	Sk	eP		08	33	19
	Gb	iP		08	33	04
North Atlantic Ocean.						

1959						
Mar 19	Up	iP		09	47	33
	Ki	iP		09	46	37
	Sk	iP		09	47	05
	Gb	iP		09	47	46
	Southern Alaska (h ~ 100 km).					
» 19	Gb	iP		14	26	52
	Honshu, Japan.					
» 20	Up	iP		01	13	20C
				μ	s	
		P	z′	0.2	0.9	
	Ki	iP		01	12	28C
				μ	s	
		P	z′	0.3	1.0	
	Sk	iP		01	13	03
		i		01	14	50
	Kamchatka. Magn. = 6.3 (Up, Ki).					
» 20	Up	i(P)		13	53	07
» 20	Up	iP		15	55	58
				μ	s	
		M	E	1.0	17	
		M	N	1.1	18	
		M	Z	0.9	18	
	Ki			—		
				μ	s	
		M	E	1.8	20	
		M	N	0.9	16	
	Honshu, Japan (h ~ 100 km).					
» 20	Up	iP		20	26	47
		i		20	26	50
» 21	Ki	iP		00	07	18C
	Sumbawa Island.					
» 21	Up	ePKP		04	45	32
		iPKP		04	45	36
		iSKP		04	48	25
	Ki	iPKP		04	45	29
	Sk	ePKP		04	45	29
		iPKP		04	45	38
	Fiji Islands (h ~ 550 km).					
» 21	Up	eP		19	48	14
	Ki	iP		19	47	10
	Sk	eP		19	47	48
	Unimak Island.					
» 21	Up	iPKP		20	05	11
		iPP		20	07	57
	Ki	iPP		20	07	35
				μ	s	
		PP	z′	0.3	1.3	
	Sk	ePKP		20	05	05
		iPP		20	07	51
	Fiji Islands.					
» 22	Up	iP		22	40	52
		i		22	40	56

1959						
Mar 22		i		22	41	06
(cont.)	Sk	iP		22	41	04C
		e		22	45	02
		i(PcP)		22	45	31
	Near west coast of France.					
» 23	Up	iP		07	22	02
		iS		07	31	40
				μ	s	
		S	N	0.7	7	
		M	E	1.1	17	
		M	N	1.2	17	
		M	Z	1.4	18	
	△ ~ 8350 km ~ 75°.					
	Sk	eP		07	21	35
		i		07	21	38
	Gb	iP		07	22	05C
	Nevada.					
» 24	Ki	iP		05	35	25
	Sk	i(P)		05	35	55
» 24	Up	iP		17	30	12D
				μ	s	
		M	E	1.4	15	
		M	N	1.5	13	
		M	Z	1.3	14	
	Ki			—		
				μ	s	
		M	E	1.6	17	
		M	N	1.0	15	
		M	Z	1.6	16	
	Honshu, Japan.					
» 24	Up	iP		20	14	19
	Sk	iP		20	15	12
	Rumania.					
» 25	Up	iP		06	47	58
	Gb	iP		06	48	08
	Iran.					
» 25	Up	iP		07	36	20
» 26	Up	iPKP		02	42	56
		iPKKP		02	53	13
				μ	s	
		PKP	z′	0.1	0.8	
	Ki	iPKP		02	42	44
	Sk	iPKP		02	42	54
		ePKKP		02	53	16
	Gb	iPKP		02	43	05C
		iPKKP		02	53	03
	Solomon Islands (h ~ 60 km).					
» 26	Up	iP		05	04	28
	Ki	iP		05	03	35C
	Unimak Island.					
» 26	Up	iP		05	38	33
	Ki	eP		05	38	17
	Molucca Passage.					

1959						
Mar 26	Up	iP		11	12	07
		iPP		11	13	33
				μ	s	
		M	N	2.2	14	
	Ki	iP		11	12	16
	Sk	eP		11	12	32
		ePP		11	14	05
	Tadzhik-Pamir, USSR.					
» 26	Up	i(P)		11	55	00
» 26	Sk	eP		12	02	43
» 26	Up	iPKP		12	03	34
				μ	s	
		PKP	z′	0.1	0.5	
	South of Fiji Islands (h ~ 600 km?).					
» 26	Up	i(Sg)		12	07	14
				μ	s	
		(Sg)	z′	0.1	0.5	
	Ki	e(Sg)		12	09	35
	Sk	i(Sg)		12	07	10
» 26	Up	i		15	32	29
		iPg		15	32	31
		iSg		15	33	15
		△ = 380 km = 3.4°.				
	Ki	iSg		15	37	07
		△ = 1160 km = 10.4°.				
	Sk	eSg		15	35	35
		△ = 840 km = 7.6°.				
	Gb	eSg		15	34	10
		△ = 570 km = 5.1°.				
	Near coast of Baltic States, 57.4°N, 21.3°E. Origin time = 15 31 23. Seismic?					
» 26	Up	iPg		17	16	40
		iSg		17	17	21
				μ	s	
		Sg	z′	0.1	0.5	
		△ = 360 km = 3.2°.				
	Ki	e(S*)		17	19	54
		iSg		17	20	25
		△ = 980 km = 8.8°.				
	Sk	eSg		17	19	19
		△ = 760 km = 6.8°.				
	Gb	iSg		17	19	05
		△ = 710 km = 6.4°.				
	Near coast of Esthonia, 59.4°N, 23.7°E. Origin time = 17 15 35. Seismic?					
» 26	Up	iPg		17	29	53
		iSg		17	30	34
		△ = 360 km = 3.2°.				
	Ki	iS*		17	32	58
		iSg		17	33	24
		△ = 930 km = 8.4°.				
	Sk	e		17	32	03

1959						
Mar 26		iSg		17	32	36
(cont.)		△ = 770 km = 6.9°.				
	Gulf of Finland, 59.6°N, 23.8°E. Origin time = 17 28 48. Seismic?					
» 26	Up	i(P)		22	48	51
» 27	Up	i		07	09	49
		iPg		07	09	51
		iS*		07	10	28
		iSg		07	10	35
		△ = 380 km = 3.4°.				
	Gb	eSg		07	11	29
		△ = 560 km = 5.0°.				
	Near coast of Baltic States, 57°N, 21°E. Origin time = 07 08 43. Seismic?					
» 27	Up	iP		07	13	09D
				μ	s	
		P	z′	0.1	0.7	
	Ki	iP		07	13	16
				μ	s	
		P	z′	0.3	1.0	
	Sk	iP		07	12	55
		i		07	13	08
	Gb	iP		07	12	55D
	Leeward Islands (h ~ 150 km).					
» 28	Up	i(P*)		07	46	47
		iPg		07	46	50
		iSg		07	47	34
		△ = 380 km = 3.4°.				
	Sk	eSg		07	49	57
		△ = 860 km = 7.7°.				
	Near coast of Baltic States, 57°N, 21°E. Origin time = 07 45 42. Seismic?					
» 28	Up	iPg		11	41	09
		iS*		11	41	45
		iSg		11	41	52
		△ = 370 km = 3.3°.				
	Gb	iSg		11	42	47
		△ = 560 km = 5.0°.				
	Near coast of Baltic States, 57°N, 21°E. Origin time = 11 40 03. Seismic?					
» 28	Up	iPg		12	17	03
		iSg		12	17	45
		i		12	17	51
		△ = 360 km = 3.2°.				
	Gb	e(Sg)		12	18	33
	Near coast of Baltic States, 57°N, 21°E. Origin time = 12 15 59. Seismic?					
» 28	Up	iP		17	23	14
	Ki	iP		17	22	54

1959
Mar 28 (cont.)

		P	z′	μ 0.1	s 1.0

Formosa.

» 28	Ki	i(PKP)	18	49	13
		e	18	49	53
	Sk	i(PKP)	18	49	30
» 28	Up	iP	18	50	17C
		i	18	50	39
	Ki	iP	18	50	25
	Sk	iP	18	50	42
		iPP	18	52	20
	Gb	iP	18	50	39

Hindu Kush (h ~ 200 km).

» 28	Up	i(PKP)	20	05	20
		iPKP	20	05	24
		iPKS	20	09	05
		PKP z′	μ 0.1	s 0.7	
	Ki	iPKP	20	05	15
		ipPKP	20	07	36
		iSKP	20	07	48
		iPKS	20	08	41
		PKP z′	μ 1.8	s 3.0	
		SKP z′	0.2	1.5	
		PKS E	0.6	7	
		PKS N	0.9	8	
		△ ~ 14450 km ~ 130°.			
	Sk	e(PKP)	20	05	14
		iPKP	20	05	25
	Gb	iPKP	20	05	31
		i	20	05	50

Fiji Islands (h ~ 600 km).

» 28	Up	iP	21	20	21
	Sk	iP	21	20	27

Formosa.

» 29	Up	iP	19	19	37D
		i(PcP)	19	20	10
		P z′	μ 0.1	s 0.9	
	Ki	iP	19	18	55D
		P z′	μ 0.1	s 1.0	
	Sk	iP	19	19	31
	Gb	iP	19	20	01

Sikhota Alin (h ~ 300 km). Magn. = = 5.5 (Up, Ki).

» 29	Up	iP	23	12	18
		M E	μ 1.0	s 18	
		M N	1.2	12	
	Ki	iP	23	13	30
		M E	μ 1.1	s 13	
	Sk	iP	23	12	59

1959
Mar 29 (cont.)

	Gb	iP	23	12	09

Greece.

» 29	Up	iP	23	27	47
	Ki	eP	23	28	59
	Sk	iP	23	28	27
	Gb	iP	23	27	37

Greece.

» 30	Up	iP	03	28	22
		i	03	29	15
» 31	Up	iP	01	16	24
	Ki	iP	01	15	31
	Sk	iP	01	15	59

Aleutian Islands.

» 31	Up	eL	08	25	
		M E	μ 0.8	s 21	
		M N	1.4	22	
		M Z	1.6	20	
	Ki	eL	08	24	
		M E	μ 1.5	s 18	
		M N	1.2	19	
		M Z	1.9	19	

Samoa Islands.

Apr 1	Up	iP	00	42	08
		i	00	42	2
		iS	00	48	24
		P z′	μ 0.3	s 1.0	
		S E	3.2	17	
		S N	2.2	11	
		M E	6.8	18	
		M N	5.8	18	
		M Z	9.7	20	
		△ = 4600 km = 41 ½°.			
	Ki	iP	00	42	54
		iPP	00	44	45
		eS	00	49	43
		P z′	μ 0.7	s 1.3	
		PP z′	0.5	1.9	
		S E	3.0	18	
		S N	1.6	13	
		M E	6.6	19	
		M N	2.0	19	
		M Z	5.1	16	
		△ = 5300 km = 47 ½°.			
	Sk	iP	00	42	12C
		i	00	42	23
	Gb	iP	00	41	34C

Canary Islands. Probably slightly deeper than normal. Magn. = 6.2 (Up, Ki).

1959
Apr 1

	Ki	iPKP	15	07	19
	Sk	iPKP	15	07	30

New Hebrides Islands (h ~ 200 km).

» 1	Ki	e	15	32	52
		eSg	15	33	08

Ristijärvi, Finland (after E. Penttilä, Univ. of Helsinki, Publ. of Seismology, 40, 1960).

» 1	Up	iP	18	30	14
	Ki	eP	18	29	33

California.

» 1	Up	iP	20	33	08
» 1	Ki	iP	22	43	32

Caspian Sea.

» 2	Up	iP	04	14	24
		P z′	μ 0.2	s 1.7	
	Ki	iP	04	13	56
		P z′	μ 0.1	s 1.0	
	Gb	iP	04	14	43

Ryukyu Islands. Magn. = 5.9 (Up, Ki).

» 2	Up	iP	04	39	07
	Ki	iP	04	40	19
	Gb	iP	04	39	05

Turkey.

» 2	Up	iSg	05	28	14
		△ = 720 km = 6.5°.			
	Ki	ePg	05	25	46
		iSg	05	26	30
		△ = 380 km = 3.4°.			

Origin time = 05 24 38.

» 2	Up	i(Sn)	08	34	55
		iSg	08	35	27
		Sg z′	μ 0.3	s 1.0	
		△ ~ 720 km ~ 6.5°.			
	Ki	iPg	08	33	04
		iSg	08	33	48
		Sg z′	μ 0.2	s 0.5	
		△ = 380 km = 3.4°.			

Same epicenter as for the preceding earthquake. Origin time = 08 31 56.

» 2	Up	iP	19	33	38D
		M E	μ 1.3	s 14	
		M N	1.0	16	
		M Z	2.3	16	
	Ki	iP	19	33	19

1959
Apr 2 (cont.)

		P z′	μ 0.2	s 1.7	
		M E	1.0	14	
		M N	0.9	15	
	Gb	iP	19	34	01D

Batan Islands.

» 3	Up	iP	01	38	08
		P z′	μ 0.1	s 1.0	
	Ki	iP	01	37	15C
	Sk	iP	01	37	47

Aleutian Islands.

» 3	Up	i(P)	02	10	22
» 3	Ki	eP	05	59	54

Formosa (h ~ 200 km).

» 3	Gb	i(P)	11	59	58
» 3	Ki	iP	12	51	03
» 3	Up	iP	16	16	07
	Ki	iP	16	16	17C
		P z′	μ 0.1	s 1.0	
	Gb	iP	16	16	32

Nicobar Islands.

» 4	Ki	e(Sg)	12	33	32

Utajärvi, Finland (after E. Penttilä, Univ. of Helsinki, Publ. of Seismology, 40, 1960).

» 4	Up	iP	19	15	28
		P z′	μ 0.1	s 1.0	
	Ki	iP	19	14	35
		P z′	μ 0.1	s 1.0	
	Sk	iP	19	15	11
	Gb	iP	19	15	51

Kamchatka. Magn. = 5.7 (Up, Ki).

» 5	Up	iP	05	20	53
» 5	Up	iP	05	48	20
	Ki	iP	05	47	27D
		i	05	50	33
	Sk	iP	05	47	58

Aleutian Islands.

» 5	Up	iP	10	51	49
		iS	10	55	07
		iLg2	10	57	12
		P z′	μ 0.3	s 1.5	
		S E	1.0	5	
		S N	1.0	5	
		M E	4.4	9	

1959 Apr 5 (cont.)		M	N	3.7	9	
		M	Z	3.6	9	
		△=1900 km=17°.				
	Ki	iP		10	53	16
				μ	s	
		P	Z′	0.6	1.5	
		M	E	4.6	11	
		M	N	2.0	9	
		M	Z	2.9	10	
	Sk	iP		10	52	23
		i		10	53	08
	Southeastern France. Magn.=5.5 (Up, Ki). Lg2 is extremely clear at Uppsala.					
» 5	Sk	iP		15	26	24
	Western Alps, France.					
» 5	Sk	eP		18	17	33
	Hungary-Croatia.					
» 5	Up	iP		20	10	57
		iPcP		20	11	25
				μ	s	
		P	Z′	0.1	0.6	
	Ki	iP		20	10	10
	Sk	eP		20	10	46
	Kurile Islands.					
» 5	Up	iPKP		21	24	53
	Ki	iPKP		21	24	39
	Sk	iPKP		21	24	50
	New Hebrides Islands (h ~ 150 km).					
» 5	Up	iP		21	28	06
				μ	s	
		P	Z′	0.1	0.5	
	Sk	iP		21	28	01
» 5	Up	iPP		23	48	55
				μ	s	
		M	E	1.8	26	
		M	N	1.4	20	
		M	Z	2.6	20	
	Ki	ePP		23	48	24
	New Guinea.					
» 6	Up	iP		05	35	21
		i		05	35	32
				μ	s	
		P	Z′	0.3	1.0	
	Ki	iP		05	34	28
	Sk	iP		05	34	59
		i		05	35	13
	Gb	eP		05	35	40
		i		05	35	50
	Aleutian Islands.					

1959 Apr 6	Ki	ePg		12	31	44
		iSg		12	32	35
	Taivalkoski, Finland (after E. Penttilä, Univ. of Helsinki, Publ. of Seismology, 40, 1960).					
» 6	Ki	iP		14	05	33C
	Sk	iP		14	05	16
	Colombia.					
» 6	Up	iP		14	26	48D
		i(PP)		14	30	56
				μ	s	
		P	Z′	0.4	1.5	
		M	E	7.4	25	
		M	N	4.2	19	
		M	Z	7.6	23	
	Ki	iP		14	26	37C
		i(PP)		14	30	39
				μ	s	
		P	Z′	0.3	1.5	
		M	E	6.2	20	
		M	N	4.0	20	
		M	Z	6.3	21	
	Sk	iP		14	26	57
		iPP		14	31	26
	Sumba Island. Magn.=6.6 (Up, Ki).					
» 6	Up	iPKP		22	42	16
	Ki	iPKP		22	41	56C
				μ	s	
		PKP	Z′	0.1	0.8	
	Sk	iPKP		22	42	11
	Kermadec Islands.					
» 7	Ki	eP		00	12	06
	Mariana Islands.					
» 7	Up	iP		05	56	48
	Ki	iP		05	56	19
	Mariana Islands.					
» 8	Up	iPKP		01	42	33
		i		01	42	40
		i		01	42	59
		ipPKP2		01	44	23
				μ	s	
		PKP	Z′	1.2	1.0	
	Ki	iPKP		01	42	12
				μ	s	
		PKP	Z′	0.8	1.6	
	Sk	i(PKP)		01	42	24
		iPKP		01	42	28
	Gb	i(PKP)		01	42	37
		iPKP		01	42	45C
		i!		01	42	59
		ipPKP2		01	44	38
	Kermadec Islands (h ~ 400 km). At Sk and Gb, a small-amplitude phase					

1959 Apr 7 (cont.)	precedes the large-amplitude PKP. See G. Payo Subiza and M. Båth, Geophys. J., 8:496—513, 1964.					
» 8	Ki	iPKP		07	59	58
	Macquarie Islands.					
» 8	Ki	iPKP		08	20	35
	Gb	iPKP		08	20	50
	Tonga Islands (h ~ 100 km).					
» 8	Up	iPKP		12	03	40
		iPP		12	07	04
				μ	s	
		PP	E	0.9	5	
		M	E	2.2	19	
		M	N	2.7	22	
		M	Z	3.8	21	
	Ki	iPKP		12	03	49
				μ	s	
		PKP	Z′	1.0	2.5	
		M	E	1.8	20	
		M	N	0.9	20	
	Gb	iPKP		12	03	34
	Chile-Argentina.					
» 8	Ki	i(Sn)		14	09	36
		i(Sg)		14	09	55
» 8	Ki	i(Sn)		14	26	01
		i(Sg)		14	26	20
» 8	Up	iP		19	07	37D
	Sk	eP		19	08	17
	Aegean Sea.					
» 9	Sk	eP		03	33	31
	Crete.					
» 9	Up	i(SKP)		05	06	18D
		i		05	06	56
				μ	s	
		(SKP)	Z′	0.1	1.0	
	New Hebrides Islands (h ~ 100 km).					
» 9	Up	iSKS		06	43	40
				μ	s	
		SKS	E	0.5	5	
		M	E	1.9	18	
		M	N	2.4	20	
		M	Z	2.9	18	
	Ki	i		06	47	30
				μ	s	
		M	E	1.6	18	
		M	N	1.4	18	
	Indian Ocean. Magn.=6.0 (Up, Ki).					
» 9	Up	iP		12	35	20
	Kurile Islands (h ~ 60 km).					

1959 Apr 9	Gb	i(P)		12	43	41
» 9	Up	iP		12	56	40C
		i		12	56	45
				μ	s	
		P	Z′	0.1	0.7	
	Ki	iP		12	55	47
	Aleutian Islands.					
» 9	Up	eP		17	18	50
		i		17	18	59
		i		17	19	07
	Ki	iP		17	18	44
	Sk	iP		17	19	07
		i		17	19	19
	Gb	eP		17	19	21
		i		17	19	29
	India-Burma.					
» 9	Up				—	
				μ	s	
		M	E	1.8	19	
		M	N	2.7	22	
		M	Z	4.0	24	
	Ki	eP		17	49	06
		eSKS		17	59	32
		eS		17	59	51
		eSS		18	05	47
				μ	s	
		SKS	E	0.6	11	
		S	N	0.7	12	
		M	E	1.7	19	
		M	N	1.2	19	
		△=9900 km=89°.				
	Sk	iP		17	48	52
	Panama. Magn.=6.0 (Up, Ki).					
» 9	Ki	iP		21	06	52
» 10	Up	iP		00	03	32C
	Hokkaido, Japan.					
» 10	Up	iPKP		06	06	03D
		iSKP		06	08	49
		i!		06	09	07
		i(SS)		06	27	11
		iSSS		06	32	39
				μ	s	
		PKP	N	0.8	1.0	
		PKP	Z	3.6	1.0	
		PKP	Z′	1.2	0.5	
		SKP	Z	0.4	2	
		SKP	Z′	0.3	1.1	
		△ ~ 15800 km ~ 142°.				
	Ki	iPKP		06	05	44
		i		06	05	52
		iSKP		06	08	28
				μ	s	
		PKP	Z′	0.2	1.0	
		SKP	Z′	1.2	1.5	

1959
Apr 10 (cont.)

△ ~ 15000 km ~ 135°.

Sk	iPKP		06	05	56C
	iSKP		06	08	42
Gb	iPKP		06	06	11
	ipPKP		06	08	28

South of Fiji Islands (h ~ 600 km).

» 10	Up	i(P)		18	35	32
» 11	Ki	iP		07	04	23

Caucasus.

» 11	Ki	iP		11	42	32
		e		11	53	06
				μ	s	
		M	E	1.2	21	
		M	N	1.1	21	

Spice Islands.

» 11	Up	iP		14	32	41 D
				μ	s	
		P	z′	0.1	0.8	

Aleutian Islands.

» 11	Ki	eP		14	59	02
	Sk	eP		14	58	49

Colombia-Venezuela.

» 11	Sk	i(P)		23	33	08
» 12	Up	e(P)		05	16	04
		i		05	16	35
		i		05	16	50
» 12	Up	iP		09	48	20
	Ki	i(P)		09	46	03
» 12	Up	iP		10	07	25
		ipP		10	07	51
		i(PP)		10	10	45
		eSKS		10	17	34
		iS		10	17	54
				μ	s	
		P	z′	0.1	0.6	
		pP	z′	0.2	1.1	
		SKS	E	1.0	9	
		SKS	N	0.8	8	
		S	E	2.7	7	
		S	N	2.1	7	
		M	E	0.8	18	
		M	N	1.0	20	
		M	Z	1.6	20	
		△ = 9850 km = 88½°.				
	Ki	iP		10	07	12C
		ipP		10	07	37
		iS		10	17	22
		iPKKP		10	25	28
				μ	s	
		P	Z	0.7	5	
		P	z′	0.8	1.6	

1959
Apr 12 (cont.)

		pP	E	0.8	6
		pP	Z	1.5	6
		pP	z′	0.8	1.5
		S	E	5.9	9
		S	N	2.5	8
		S	Z	1.1	8
		M	E	1.7	19
		M	N	0.6	17
		M	Z	1.3	19
		△ = 9400 km = 84½°.			
	Sk	iP		10 07	06C
		i		10 07	12
		ipP		10 07	33
		iPKKP		10 25	30
	Gb	iP		10 07	16C
		ipP		10 07	43
		i(PP)		10 10	30

Mexico. h = 105 km (Up, Ki, Sk, Gb). Magn. = 6.4 (Up, Ki).

» 12	Up	iP		11 11	14
				μ	s
		P	z′	0.1	1.0
		M	E	1.7	18
		M	N	1.1	18
		M	Z	2.6	18
	Ki	iP		11 10	49
				μ	s
		P	z′	0.1	1.2
		M	E	0.8	17
		M	N	0.7	16
		M	Z	1.1	16
	Sk	iP		11 11	15
	Gb	iP		11 11	32

Formosa. Magn. = 5.8 (Up, Ki).

» 12	Up	iP		11 17	54
	Ki	iP		11 17	29

Formosa.

» 12	Up	e		15 45	01
				μ	s
		M	E	3.6	19
		M	N	4.5	20
		M	Z	4.1	21
	Ki	iP		15 36	31
		eSKS		15 47	03
				μ	s
		SKS	E	0.3	6
		M	E	3.7	20
		M	N	2.3	18
		M	Z	2.6	17

New Guinea (h ~ 100 km).

» 12	Ki	iP		16 02	02

Kamchatka.

» 12	Ki	iPn		18 30	15 D
		iSn		18 31	10
		eSg		18 31	25

1959
Apr 12 (cont.)

Ristijärvi, Finland (after E. Penttilä, Univ. of Helsinki, Publ. of Seismology, 40, 1960).

» 12	Sk	eP		20	52	46
	Gb	iP		20	52	45
» 12	Up	ePKP		21	13	20
		i		21	17	03
				μ	s	
		M	E	1.1	20	
		M	N	3.3	23	
		M	Z	3.6	22	
	Ki	iPKP		21	13	07
		i		21	13	19
		e		21	15	17
		e		21	16	34
		e		21	20	10
				μ	s	
		M	E	1.8	20	
		M	N	1.4	20	
		M	Z	2.4	20	
	Sk	ePKP		21	13	16
		i		21	13	30
	Gb	iPKP		21	13	30
		i		21	13	45

Samoa Islands. Magn. = 6.1 (Up, Ki).

» 12	Up	iP		23	34	48

Kurile Islands.

» 13	Up	i(P)		01	26	53
» 13	Up	i(P)		07	24	26

Seismic?

» 13	Up	iP		10	39	01
	Ki	iP		10	39	00
» 13	Up	iP		18	42	31 D
		i(PcP)		18	43	00
				μ	s	
		P	z′	0.1	0.5	
	Ki	iP		18	42	28 D
				μ	s	
		P	z′	0.1	1.0	
	Sk	iP		18	42	48
	Gb	iP		18	42	51 D

India-Burma. Magn. = 5.9 (Up, Ki)

» 13	Up	iP		22	43	45
		i		22	43	55
				μ	s	
		P	z′	0.2	0.7	
	Ki	iP		22	42	52
	Sk	iP		22	43	25

Aleutian Islands.

» 14	Ki	iP		01	33	00

Northeast of Socotra Island.

1959
Apr 14

» 14	Ki	iP		01	49	42

Northeast of Socotra Island.

» 14	Up			—		
				μ	s	
		M	E	0.8	18	
		M		1.5	24	
		M	Z	1.1	18	
	Ki	eP		03	05	25
				μ	s	
		M	E	0.8	13	
		M	N	0.7	13	
		M	Z	0.7	13	

Gulf of California.

» 14	Ki	iP		06	57	29

Gulf of California.

» 14	Up	iP		07	30	48
		ipP		07	31	05
				μ	s	
		P	z′	0.1	0.5	
	Ki	iP		07	29	52
		i		07	29	54
		iS		07	37	25
				μ	s	
		P	z′	0.2	1.0	
		△ = 6100 km = 55°.				
	Sk	iP		07	30	21
	Gb	iP		07	30	57
		iPcP		07	31	34

Alaska. h = 70 km (Up). Magn. = 6.0 (Up, Ki).

» 14	Up	iP		18	12	53
		i(pP)		18	13	10
	Ki	iP		18	12	21
		i(pP)		18	12	38
	Sk	iP		18	12	50
		i(pP)		18	13	06

Sea of Japan.

» 15	Up	iP		00	26	31C
		iS		00	35	36
				μ	s	
		P	Z	0.4	3	
		P	z′	0.3	1.3	
		S	E	0.6	5	
		S	N	0.6	5	
		M	E	4.0	21	
		M	N	5.4	22	
		M	Z	4.4	21	
		△ = 7700 km = 69½°.				
	Ki	iP		00	25	49
		iS		00	34	17
				μ	s	
		P	Z	0.4	4	
		P	z′	0.2	1.4	
		S	E	0.8	8	
		S	N	0.8	9	
		M	E	4.5	18	

1959
Apr 15 (cont.)

	M	N	4.2	18	
	M	Z	3.9	17	

△=7000 km=63°.

Sk	iP	00	26	24
	i	00	26	42
Gb	iP	00	26	53C

Hokkaido, Japan. Magn.=6.0 (Up, Ki).

» 15	Up	iP	17	13	51D

		μ	s
P	z′	0.1	0.7

Ki	iP	17	12	57
	iPcP	17	13	41

Aleutian Islands.

» 15	Up	iP	19	21	47C

		μ	s
P	z′	0.2	1.0

Ki	iP	19	20	52

		μ	s
P	z′	0.1	1.0

Sk	iP	19	21	30
Gb	iP	19	22	11

Kamchatka. Magn.=5.9 (Up, Ki).

» 16	Up	iPKP	00	11	04
	Gb	iPKP	00	11	19

Fiji Islands (h ~ 600 km).

» 16	Up	iPKP	07	45	56
	Ki	iPKP	07	45	35
		iSKP	07	48	25
	Sk	ePKP	07	45	51
	Gb	iPKP	07	46	07D
		iSKP	07	48	56

South of Fiji Islands (h ~ 550 km).

» 16	Up	iPg	10	05	41C
		iSg	10	05	58
		iL	10	06	07

		μ	s
Pg	z′	0.1	0.5
Sg	z′	0.1	0.5

△=140 km=1.3°.

Explosion of 20 ton dynamite near Norrköping, Sweden, 58°38′N, 16°14′E. Origin time=10 05 15.

» 16	Up	eP	11	04	54

Rumania (h ~ 150 km).

» 16	Ki	e(P)	11	11	01
» 16	Up	eP	16	27	16
		ipP	16	27	36
		iSKS	16	37	41

1959
Apr 16 (cont.)

		μ	s
SKS	E	0.5	3
M	E	1.0	17
M	N	1.1	19
M	Z	1.1	18

△ ~ 10700 km ~ 96½°.

Ki	iP	16	26	49
	ipP	16	27	10
	eSKS	16	37	07

		μ	s
P	z′	0.1	1.5
pP	z′	0.3	1.5
SKS	E	0.5	13
M	E	0.9	17
M	N	0.6	18

△ ~ 10100 km ~ 91°.

Gb	e(PP)	16	31	12

Mariana Islands. h=80 km (Up, Ki).

» 17	Up	i(P)	07	43	12
» 17	Up	i	08	39	49
		iSg	08	40	33
	Ki	i	08	36	18
		iPn	08	36	26
		iSg	08	37	19
		i	08	37	32

		μ	s
Sg	z′	0.2	0.9

△=360 km=3.2°.

Sk	iPn	08	36	47
	iP*	08	36	57
	iSg	08	38	07

△=510 km=4.6°.

Gb	iSg	08	41	13

Atlantic Ocean, off Lofoten, 68¼°N, 12°E. Origin time=08 35 34. The solution is not completely satisfactory; it appears as if Up and Ki have recorded another shock at about the same time (the first phases for Up and Ki given above).

» 17	Up	iP	12	16	55D
	Ki	iP	12	16	11
	Gb	iP	12	17	17D

Hokkaido, Japan.

» 18	Up	iP	03	47	20C
		i	03	47	30
	Ki	iP	03	48	30
	Sk	iP	03	48	00
		i	03	50	56

Greece.

» 18	Sk	iPKP	06	36	37

New Ireland.

» 18	Up	iP	09	23	36

1959
Apr 18

	Ki	e(Pn)	12	33	14
		i(Sn)	12	34	10
		i(Sg)	12	34	33
» 18	Up	iP	15	13	19
	Sk	iP	15	13	16
» 18	Ki	iP	23	21	37

Aleutian Islands.

» 19	Up	eL	08	29	

		μ	s
M	E	0.8	21

Pacific Ocean.

» 19	Up	iP	09	04	50

		μ	s
P	z′	0.1	1.2

	Ki	iP	09	05	34

		μ	s
M	E	0.5	13
M	N	0.4	13
M	Z	0.7	13

Turkey.

» 19	Ki	iP	15	03	05

Volcano Islands.

» 19	Up	iP	15	13	50

		μ	s
P	z′	0.1	1.0

	Ki	iP	15	12	52
		i	15	13	01
		iS	15	20	26

		μ	s
P	z′	0.2	1.0
S	N	0.6	9
M	E	0.8	17
M	N	1.8	22
M	Z	2.9	22

△=6000 km=54°.

	Sk	iP	15	13	20
		i	15	13	28

Kodiak Island. Magn.=5.8 (Up, Ki).

» 19	Up	iP	17	43	54
		i!	17	44	06
		iS	17	47	57

		μ	s
P	z′	0.1	0.5
M	E	1.1	20
M	N	2.3	13
M	Z	2.0	13

△=2500 km=22½°.

	Ki	iP	17	45	07

		μ	s
M	E	0.9	13
M	N	0.9	14
M	Z	1.3	14

	Sk	iP	17	44	33C
		iPP	17	45	04

Greece.

1959
Apr 19

	Ki	iP	20	30	24

Persian Gulf.

» 19	Ki	iP	20	40	40

Persian Gulf.

» 20	Up	e(PS)	03	57	14

		μ	s
M	E	2.3	20
M	N	2.8	20
M	Z	3.9	20

	Ki	ePKP	03	46	19
		e	03	48	48
		e	03	55	40

		μ	s
M	E	2.5	23
M	N	2.6	22
M	Z	5.1	23

	Sk	iPP	03	47	28

New Britain (h ~ 100 km).

» 20	Up	iP	04	34	02

		μ	s
M	E	0.9	19
M	Z	1.4	18

	Ki	eP	04	33	59

		μ	s
M	E	0.7	16
M	N	0.6	17
M	Z	1.4	17

Costa Rica.

» 21	Ki	iPKP	01	45	56
	Gb	iPKP	01	46	21D

South of Fiji Islands (h ~ 550 km).

» 21	Up	iP	10	13	39
		i	10	13	49
	Ki	eP	10	12	53
		i	10	13	09
	Sk	e(P)	10	13	44

Kurile Islands.

» 21	Up	iP	11	09	26C
	Ki	iP	11	08	49
	Sk	iP	11	09	21

Honshu, Japan.

» 21	Ki	iP	11	28	29

Aleutian Islands.

» 21	Ki	iP	12	52	32

Bristol Bay.

» 21	Gb	iPg	16	36	05C
		iSg	16	36	06

Local blast?

» 22	Up	iP	03	44	22
		i	03	44	26

1959 Apr 22 (cont.)		ipP		03	46	02
	Ki	iP		03	44	37
	Sk	iP		03	44	48 D
		epP		03	46	29
	Gb	iP		03	44	44
		iPP		03	46	37
	Hindu Kush. h = 200 km (Up, Sk).					
» 22	Ki	iP		07	43	37
				μ	s	
		P	z′	0.1	1.0	
	Sk	iP		07	43	53
	Gb	iP		07	43	54 C
	Sumatra (h ~ 200 km).					
» 22	Up	iP		11	05	57 C
		i		11	06	04
		iPcP		11	06	24
		iS		11	14	43
				μ	s	
		P	z′	0.2	0.7	
		△ ~ 7450 km ~ 67°.				
	Ki	iP		11	05	03 C
		iPcP		11	05	57
				μ	s	
		P	z′	0.3	1.0	
		PcP	z′	0.3	1.1	
	Sk	iP		11	05	33 C
		iPcP		11	06	10
	Gb	iP		11	06	11 C
		iPcP		11	06	35
	Aleutian Islands. Deeper than normal. Magn. = 6.3 (Up, Ki).					
» 22	Up	iP		12	08	46
» 22	Up	iP		17	36	36
	Ki	iP		17	36	40 C
	Sk	iP		17	36	23
	Venezuela-Colombia.					
» 22	Up	iP		19	08	08
	Ki	iP		19	07	43
	Sk	iP		19	08	15
	Northern China.					
» 22	Up			—		
				μ	s	
		M	E	0.8	21	
		M	N	0.6	19	
		M	Z	0.6	20	
	Ki	iP		19	14	20
				μ	s	
		M	E	1.5	17	
		M	N	0.5	16	
		M	Z	1.9	18	
	Sk	iP		19	14	11
		i		19	14	44
	Nicaragua.					
» 22	Up	iPKS		20	49	36

1959 Apr 22 (cont.)				μ	s	
		M	E	0.8	20	
		M	N	1.0	20	
		M	Z	1.0	20	
	Ki	ePKP		20	46	12
				μ	s	
		M	E	1.0	19	
		M	N	0.6	19	
		M	Z	1.3	19	
	Sk	ePKP		20	46	07
	Gb	ePKP		20	46	05
	Pacific Ocean.					
» 22	Sk	iP		21	51	11
	Aegean Sea.					
» 23	Ki	i(P)		15	16	45 C
» 23	Up	iPg		16	32	07
		i		16	32	11
		iSg		16	32	12
				μ	s	
		Sg	z′	0.3	0.5	
	Local blast?					
» 23	Sk	iPKP		19	29	06 D
	New Hebrides Islands.					
» 23	Up	iP		22	51	31
» 24	Up			—		
				μ	s	
		M	E	1.1	22	
		M	N	0.9	18	
		M	Z	1.7	21	
	Ki	eP		09	44	11
				μ	s	
		M	E	2.1	18	
		M	N	0.6	17	
		M	Z	1.9	18	
	Nicaragua.					
» 24	Up	iPKP		18	17	46 C
		i		18	17	51 C
		iPP		18	21	22
				μ	s	
		PKP	E	0.3	4	
		PKP	N	0.6	5	
		PKP	Z	2.6	4	
		PKP	Z′	0.8	1.0	
		PP	E	0.4	7	
		PP	N	1.1	7	
		PP	Z	1.5	8	
		M	E	3.8	20	
		M	N	6.8	21	
		M	Z	6.8	21	
		△ ~ 16550 km ~ 149°.				
	Ki	iPKP		18	17	30
		i		18	17	36
		iPP		18	20	34

1959 Apr 24 (cont.)		iPKS		18	21	10
		eSKSP		18	30	46
				μ	s	
		PKP	N	0.3	7	
		PKP	Z	1.5	7	
		PKP	Z′	0.3	1.1	
		PP	Z	1.5	8	
		PKS	E	1.0	7	
		PKS	N	0.9	7	
		SKSP	N	0.8	7	
		M	E	4.5	21	
		M	N	3.1	20	
		M	Z	4.8	20	
		△ ~ 15650 km ~ 141°.				
	Sk	iPKP		18	17	43 C
	Gb	iPKP		18	17	52 C
		i		18	18	00
	Kermadec Islands. Magn. = 6.6 (Up, Ki). The second PKP (Up, Ki, Gb) has a much larger amplitude than the first PKP.					
» 25	Up	iP		00	31	54
		iS		00	36	15
				μ	s	
		P	E	1.2	5	
		P	N	4.2	6	
		P	Z	3.9	5	
		P	Z′	0.3	1.0	
		S	E	3.2	11	
		S	N	15	11	
		S	Z	4.8	14	
		M	E	44	16	
		M	N	24	17	
		M	Z	14	13	
		△ = 2650 km = 24°.				
	Ki	iP		00	33	02 D
		i		00	33	45
		eS		00	38	09
		iLg1		00	42	27
				μ	s	
		P	N	1.2	5	
		P	Z	1.2	5	
		P	Z′	0.7	1.2	
		S	N	3.8	19	
		M	E	11	13	
		M	N	11	17	
		M	Z	12	16	
		△ = 3450 km = 31°.				
	Sk	iP		00	32	36 D
	Gb	iP		00	31	52 D
		eS		00	36	18
	Turkey. Magn. = 6.3 (Up, Ki).					
» 25	Up	iP		01	10	55
		i		01	11	17
		eS		01	15	10
				μ	s	
		P	Z′	0.1	0.8	
		S	E	1.0	11	

1959 Apr 25 (cont.)		S	N	3.0	10	
		M	E	6.9	16	
		M	N	4.0	18	
		M	Z	2.0	13	
		△ = 2650 km = 24°.				
	Ki	iP		01	12	02 D
		i(Lgl)		01	21	28
				μ	s	
		P	Z′	0.3	1.0	
		M	E	3.7	10	
		M	N	1.9	17	
		M	Z	2.1	17	
	Sk	iP		01	11	36
	Gb	iP		01	10	54
		i		01	11	03
	Turkey. Magn. = 5.6 (Up, Ki).					
» 25	Up	iP		09	35	41
	Sk	eP		09	36	15
		i		09	36	25
	Greece.					
» 25	Gb	iPg		11	30	49
		iSg		11	30	52
	Local blast?					
» 25	Up	eP		23	00	49
		i		23	01	30
	Ki	iP		23	00	15
	Sk	iP		23	00	49
	Honshu, Japan.					
» 26	Ki	iPKP		06	06	38
	Sk	iPKP		06	06	48
	New Hebrides Islands.					
» 26	Ki	iP		12	11	51 C
	Mindanao, Philippine Islands.					
» 26	Up	iP		12	45	35
		i		12	45	41
	Ki	iP		12	45	24 C
				μ	s	
		M	E	1.2	21	
		M	N	1.4	20	
		M	Z	0.6	18	
	Sk	eP		12	45	48
	China-Burma.					
» 26	Up	iP		14	48	32
		i		14	48	42
		iS		14	51	16
		iLg2		14	52	46
				μ	s	
		P	Z′	0.1	0.5	
		M	N	2.6	10	
		M	Z	1.9	10	
		△ = 1500 km = 13½°.				
	Ki	iP		14	50	11
		i(Lgl)		14	57	05

1959 Apr 26 (cont.)				μ	s	
		P	z′	0.3	1.2	
		M	E	0.7	10	
		M	N	0.8	10	
		M	Z	1.0	10	
	Sk	iP		14	49	17
		i		14	49	26
		eLg2		14	54	38
	Gb	iP		14	48	05
		iLg1		14	51	16
	Italy-Austria.					
» 26	Up	iP		20	52	11C
		ipP		20	52	44
		iPP		20	55	06
		i!		20	56	55
		iS		21	01	36
		i		21	01	44
		iSKPP′		21	22	57
				μ	s	
		P	E	19	13	
		P	N	7.3	8	
		P	Z	52	12	
		P	z′	2.2	0.8	
		PP	E	9.5	8	
		PP	Z	13	7	
		S	E	42	13	
		S	N	75	15	
		SKPP′	z′	0.2	1.7	
		M	E	120	23	
		M	N	190	21	
		M	Z	92	23	
	△=8450 km=76°.					
	Ki	P		20	51	47C
		ipP		20	52	18
		iPP		20	54	24
		i!		20	56	15
		i(S)		21	00	57
		iP′P′		21	19	31
		iSKPP′		21	22	51
				μ	s	
		P	E	13	7	
		P	N	4.4	9	
		P	Z	33	8	
		P	z′	3.8	1.0	
		pP	z′	4.3	1.4	
		PP	Z	15	9	
		(S)	E	24	8	
		(S)	N	52	10	
		SKPP′	z′	0.3	2.0	
		M	E	110	19	
		M	N	66	16	
		M	Z	51	14	
	△~7900 km~71°.					
	Sk	iP		20	52	15C
		i(ScS)		21	01	53
	Gb	iP		20	52	30
		ipP		20	53	07
		iPP		20	55	36

1959 Apr 26 (cont.)	Formosa. h=150 km (Up, Ki, Gb). Magn.=7.5 (Up, Ki).					
» 27	Sk	iP		05	23	51
	Kyushu, Japan (h~60 km).					
» 27	Ki	iP		10	02	12
		i(SKS)		10	12	35
		iPKKP		10	18	02
		eSS		10	21	06
				μ	s	
		P	z′	0.1	1.0	
		(SKS)	E	1.2	8	
		M	E	1.3	22	
		M	N	0.9	21	
		M	Z	1.6	21	
	Sk	iP		10	02	33
		iPKP		10	06	38
	Banda Sea.					
» 27	Ki	iP		13	00	29D
	Celebes (h~200 km).					
» 27	Up	i(Sn)		13	13	20
		iSg		13	13	39
		i		13	14	05
				μ	s	
		Sg	z′	0.1	0.5	
		△=370 km=3.3°.				
	Ki	iSg		13	17	02
		△=1040 km=9.4°.				
	Sk	ePg		13	13	18
		iSg		13	14	16
		△=490 km=4.4°.				
	South Norway, 59.2°N, 11.4°E. Origin time=13 11 51.					
» 27	Up	iP		13	18	52
				μ	s	
		M	E	3.9	15	
		M	N	4.6	13	
		M	Z	4.2	15	
	Ki	iP		13	18	44
		eS		13	26	11
				μ	s	
		M	E	3.2	12	
		M	N	5.1	20	
		M	Z	3.7	13	
		△=5900 km=53°.				
	Sk	iP		13	19	07
	Tsinghai Province, China.					
» 28	Up	iP		11	22	18C
		i		11	23	01
		i(PP)		11	26	01
		iSKS		11	32	40
				μ	s	
		P	E	1.3	12	
		P	Z	4.1	12	
		P	z′	0.1	0.8	
		SKS	E	4.6	11	

1959 Apr 28 (cont.)		SKS	N	2.7	15	
		SKS	Z	5.2	20	
		M	E	15	20	
		M	N	9.7	20	
		M	Z	20	20	
		△~9650 km~87°.				
	Ki	iP		11	22	05C
		i		11	22	31
		iSKS		11	32	26
				μ	s	
		P	E	2.0	15	
		P	N	0.8	14	
		P	Z	4.7	11	
		P	z′	0.3	1.5	
		SKS	E	12	17	
		SKS	N	3.4	15	
		M	E	18	20	
		M	N	11	18	
		M	Z	23	22	
		△~9350 km~84°.				
	Gb	iP		11	22	07
	Mexico-Guatemala. Magn.=6.5 (Up, Ki).					
» 28	Up	iP		14	29	12
		i(pP)		14	29	40
	Ki	iP		14	28	22
		i(pP)		14	28	45
	Aleutian Islands.					
» 28	Sk	i(P)		15	02	58
» 28	Ki	iSg		16	33	01
	Kiantajärvi, Finland (after E. Penttilä, Univ. of Helsinki, Publ. of Seismology, 40, 1960).					
» 28	Up	iP		17	22	18
		i(pP)		17	22	43
	Ki	e(pP)		17	21	35
	Aleutian Islands.					
» 28	Up	i(P)		19	07	28
				μ	s	
		(P)	z′	0.1	0.5	
» 28	Ki	eP		22	11	56
		e		22	12	16
	Sk	i(PcP)		22	12	51
	Honshu, Japan.					
» 29	Up	iP		00	31	33
		i		00	31	37
				μ	s	
		P	z′	0.1	0.8	
	Ki	iP		00	32	09C
	Sk	iP		00	32	07
	Iran.					

1959 Apr 29	Up	iP		01	38	58
		i		01	39	15
	Ki	iP		01	40	21
		e		01	45	17
	Sk	iP		01	39	51
		iPcP		01	44	09
	Gb	iP		01	39	03
	Rumania (h~150 km).					
» 29	Up	ePKP		18	15	08
	Sk	iPKP		18	15	05
	New Hebrides Islands.					
» 29	Up	iP		19	55	59
	Ki	eP		19	54	57
		i		19	55	09
	Sk	iP		19	55	45
	Kurile Islands.					
» 30	Up	iP		07	14	28
	Gb	iP		07	14	46
	Ryukyu Islands.					
» 30	Up	iPKP		13	44	28
				μ	s	
		PKP	z′	0.1	0.8	
	Ki	iPKP		13	44	43D
		i!		13	45	10
		i!		13	47	51
				μ	s	
		PKP	z′	0.3	1.0	
	Sk	iPKP		13	44	32
	Sandwich Islands.					
» 30	Ki	iP		22	43	14C
				μ	s	
		P	z′	0.2	1.5	
		M	E	0.3	15	
		M	N	0.3	12	
		M	Z	0.5	20	
	Sk	iP		22	44	03
	Gb	iP		22	45	09
		i		22	45	17
	Arctic Ocean, west of Spitsbergen.					
May 1	Up	iP		06	02	27C
				μ	s	
		M	N	0.6	13	
	Ki	iP		06	01	59C
				μ	s	
		M	E	0.5	14	
		M	N	0.3	13	
		M	Z	0.4	11	
	Sk	iP		06	02	33
	Outer Mongolia.					
» 1	Up	eL		08	04	
				μ	s	
		M	E	1.0	21	
		M	N	1.1	22	
		M	Z	1.4	21	

1959 May (cont.)	1	Ki	eL	08	12	
				μ	s	
			M E	0.9	20	
			M N	0.4	20	
			M Z	1.0	18	
		New Guinea.				
»	1	Up	i(P)	08	19	33C
»	1	Up	iP	08	30	25
			i	08	30	29
			iPP	08	31	24
			iS	08	35	29
			i!	08	36	24
				μ	s	
			P z′	0.1	0.9	
			PP z′	0.1	0.9	
			S E	0.9	10	
			S N	0.7	7	
			M E	2.3	20	
			M N	3.1	19	
			M Z	2.3	20	
			△=3550 km=32°.			
		Ki	iP	08	31	00
			iS	08	36	38
			iSa	08	38	34
			iSS	08	39	00
				μ	s	
			P z′	0.3	1.6	
			S E	0.8	11	
			S N	0.5	10	
			M E	1.1	20	
			M N	1.7	18	
			M Z	1.9	18	
			△=4000 km=36°.			
		Sk	iP	08	31	06
			iPP	08	32	17
		Gb	iP	08	30	40
			iPP	08	31	37
		Iran. Magn.=5.5 (Up, Ki).				
»	1	Ki	iP	23	12	57
		Palaos Islands.				
»	2	Up	i	06	40	34
			i	06	43	24
		Austria-Yugoslavia.				
»	2	Up	iP	11	46	46
		(Ryukyu Islands).				
»	3	Ki	iP	04	53	54
		Sk	iP	04	53	44
		Nicaragua-El Salvador (h ~ 100 km).				
»	3	Ki	eP	07	37	02
		Honshu, Japan (h ~ 100 km).				
»	3	Up	iP	08	35	01
				μ	s	
			P z′	0.1	1.2	

1959 May	3	Ki	iP	18	46	17
		Sunda Strait.				
»	4	Up	iP	03	29	31
			i	03	29	44
		Ki	iP	03	29	07
			i	03	29	19
		Formosa.				
»	4	Up	iP	07	26	09C
			iS	07	34	31
			i(P′P′)	07	54	50
				μ	s	
			P N	57	8	
			P Z	59	7	
			P Z′	1.4	0.6	
			S Z	200	23	
			M E	330	22	
			M N	470	23	
			M Z	590	23	
			△=7050 km=63½°.			
		Ki	iP	07	25	16C
			i	07	25	58
			i	07	27	44
			i	07	28	59
			iS	07	32	46
			i	07	54	42
			i(P′P′)	07	55	11
				μ	s	
			P E	8.7	6	
			P N	18	6	
			P Z	32	6	
			P Z′	5.6	1.0	
			S Z′	13	2.5	
			(P′P′) Z′	0.7	2.0	
			M E	240	19	
			M N	320	22	
			M Z	320	22	
			△=6200 km=56°.			
		Sk	iP	07	25	53
			i	07	54	56
			iP′P′	07	55	07
		Gb	iP	07	26	28
		Kamchatka (h ~ 60 km). Magn.=7.8 (Up, Ki).				
»	4	Up	eP	08	03	14
		Ki	iP	08	02	33
		Sk	iP	08	03	13
»	4	Up	iP	11	33	33
		Ki	iP	11	32	39
		Kamchatka.				
»	4	Ki	iP	13	00	00
		Kamchatka.				
»	4	Up	iP	17	28	25C
		Ki	iP	17	28	19
		Tibet-Himalaya.				

1959 May	4	Ki	i(P)	18	24	02
»	5	Up	iP	11	48	10
			i(pP)	11	48	32
		Ki	iP	11	48	18
		Sk	iP	11	48	35
			i(pP)	11	48	57
			i	11	49	10
		Afghanistan.				
»	5	Up	i(P)	16	56	09
»	5	Up	iP	19	14	43C
			i	19	14	58
			eS	19	23	09
				μ	s	
			P Z	0.4	4	
			P Z′	0.2	1.0	
			S E	0.9	10	
			S N	1.1	11	
			M E	21	20	
			M N	16	20	
			M Z	6.7	17	
			△=7000 km=63°.			
		Ki	iP	19	13	51
			eS	19	21	27
				μ	s	
			P Z′	0.1	1.0	
			S E	0.8	11	
			S N	0.7	12	
			M E	21	21	
			M N	10	21	
			M Z	8.7	22	
			△=6100 km=55°.			
		Sk	eP	19	14	27
		Gb	iP	19	15	07
			i	19	15	09
		Kamchatka. Magn.=6.0 (Up, Ki).				
»	6	Up	iP	07	55	31
			i	07	55	55
		Ki	iP	07	54	38
			i	07	54	58
		Aleutian Islands.				
»	6	Ki	iPKP	17	47	29
			ipPKP	17	49	54
			i	17	50	33
		Fiji Islands (h ~ 600 km).				
»	6	Up	iP	19	04	43
			i	19	04	52
		Ki	iP	19	04	00
		Japan.				
»	6	Ki	iP	19	06	07
				μ	s	
			M E	0.7	17	
			M N	0.3	16	
			M Z	0.9	17	
		Ceram Island.				

1959 May	7	Up	e	00	43	26
				μ	s	
			M E	3.1	23	
			M N	4.5	22	
			M Z	3.0	19	
		Ki			—	
				μ	s	
			M E	3.7	20	
			M N	2.6	20	
			M Z	4.3	19	
		Bismarck Sea. Magn.=6.2 (Up, Ki).				
»	8	Up	iP	05	27	08
				μ	s	
			P Z′	0.1	0.6	
		Ki	iP	05	26	39
				μ	s	
			P Z′	0.1	0.8	
		Sk	iP	05	27	09C
		Gb	iP	05	27	28
		Ryukyu Islands. Magn.=6.0 (Up, Ki).				
»	8	Up	eL	07	19	
				μ	s	
			M E	1.0	20	
			M N	1.1	21	
		Ki	eL	07	13	
				μ	s	
			M E	0.7	17	
			M N	0.6	18	
		Kamchatka.				
»	8	Up	iP	11	45	13C
			eS	11	53	37
				μ	s	
			P N	0.8	1	
			P Z	1.2	1	
			P Z′	0.8	0.7	
			S E	0.6	8	
			S N	0.8	8	
			M E	2.8	21	
			M N	5.0	22	
			M Z	4.9	23	
			△=6950 km=62½°.			
		Ki	iP	11	44	20
			i	11	47	33
				μ	s	
			P Z′	0.9	1.0	
			M E	2.2	18	
			M N	2.9	18	
			M Z	2.3	18	
		Sk	iP	11	44	56C
			i	11	45	19
		Gb	iP	11	45	31
		Kamchatka (h ~ 60 km). Magn.=6.9 according to P, but=5.8 according to S and M (Up, Ki).				
»	8	Sk	iP	14	14	34

1959 May 8	Up	iSg		14	36	11
		i		14	36	28
		△=380 km=3.4°.				
	Ki	e(Sn)		14	38	13
		eSg		14	39	00
		i		14	39	12
		△=950 km=8.5°.				
	Sk	eS*		14	37	48
		iSg		14	38	10
		△=770 km=6.9°.				
	Gb	eSg		14	37	55
		△=730 km=6.6°.				
	Gulf of Finland, off the coast of Esthonia, 59.5°N, 24.0°E. Origin time=14 34 19. Seismic?					
» 8	Up	iPg		15	25	04
		iSg		15	25	45
		△=360 km=3.2°.				
	Ki	eSg		15	28	25
		△=890 km=8.0°.				
	Sk	e(Sn)		15	27	05
		iS*		15	27	24
		iSg		15	27	41
		△=740 km=6.7°.				
	Southwest coast of Finland, 60.0°N, 24.0°E. Origin time=15 24 00. Seismic?					
» 8	Ki	eP		15	39	15
	Kurile Islands.					
» 8	Up	iP		22	24	53
		i		22	25	04
				μ	s	
		P	z′	0.1	0.6	
	Gb	iP		22	25	06
		i		22	25	18
	Aleutian Islands.					
» 9	Up	iP		00	08	59C
	Ki	iP		00	08	35
	Formosa.					
» 9	Up	iP		08	28	16C
	Ki	iP		08	28	01
» 9	Up	iP		12	57	21
	Ki	iP		12	56	29
				μ	s	
		P	z′	0.1	1.0	
	Sk	iP		12	56	58
	Gb	iP		12	57	35
	Aleutian Islands.					
» 9	Up	iP		13	48	04C
» 9	Ki	iP		18	43	30
	Aleutian Islands.					

1959 May 10	Up	iP		00	08	07
				μ	s	
		M	E	0.9	19	
		M	N	1.1	19	
		M	Z	1.5	19	
	Ki	eP		00	07	20
				μ	s	
		M	E	0.9	20	
		M	N	0.6	18	
		M	Z	0.7	17	
	Sk	eP		00	07	58
	Kurile Islands.					
» 10	Up	iP		01	44	02
	Ki	iP		01	43	31
	Sk	iP		01	44	00
	Japan.					
» 10	Up	iP		09	54	00
	Sea of Okhotsk (h ~ 400 km).					
» 10	Up	iP		11	00	09
		iPcP		11	00	37
	Kurile Islands.					
» 10	Ki	iP		16	59	19
» 11	Up	iP		08	46	09
	Ki	iP		08	47	09
	Sk	eP		08	46	48
	Ionian Islands.					
» 11	Up	iP		16	39	17C
		iPcP		16	39	50
				μ	s	
		P	z′	0.1	0.5	
	Ki	iP		16	38	23C
				μ	s	
		P	z′	0.1	0.9	
	Sk	iP		16	39	00C
		iPcP		16	39	44
	Gb	iP		16	39	40C
		i		16	39	53
		iPcP		16	40	09
	Kamchatka. Magn.=5.9 (Up, Ki).					
» 11	Up	iPg		17	04	45
		iSg		17	04	50
				μ	s	
		Sg	z′	0.4	0.6	
	Probably local blast.					
» 12	Up	iP		00	44	30
				μ	s	
		P	z′	0.1	0.8	
		M	E	0.8	20	
		M	N	0.9	17	
		M	Z	0.8	16	
	Ki	iP		00	44	33
				μ	s	
		M	E	0.7	15	

1959 May 12		M	N	0.4	13	
(cont.)	Sk	iP		00	44	53
	Gb	iP		00	44	54
	Tibet-India.					
» 12	Up	iP		01	06	34
» 12	Up	iP		01	34	24
	Aleutian Islands.					
» 12	Up	eP		03	55	28
	Ki	iP		03	55	30
		i		03	55	40
				μ	s	
		P	z′	0.2	1.5	
	Sk	iP		03	55	15
	Panama-Colombia.					
» 12	Up	iP		05	08	06 D
		i		05	08	17
		iS		05	16	35
				μ	s	
		P	N	1.1	8	
		P	Z	2.0	8	
		P	z′	0.3	1.5	
		S	E	4.4	10	
		S	N	2.5	9	
		M	E	8.6	20	
		M	N	14	20	
		M	Z	11	20	
		△=7050 km=63½°.				
	Ki	iP		05	07	11 D
		ePa		05	10	04
		iS		05	14	52
				μ	s	
		P	N	1.0	8	
		P	Z	2.1	8	
		P	z′	0.4	1.5	
		S	E	4.0	10	
		S	N	3.4	13	
		M	E	11	18	
		M	N	10	21	
		M	Z	13	22	
		△=6150 km=55½°.				
	Sk	iP		05	07	46 D
	Gb	iP		05	08	27 D
	Komandorskie Islands. Magn.=6.3 (Up, Ki).					
» 12	Up	iP		09	13	47
	Sk	iP		09	14	31
	Aegean Sea.					
» 12	Up	ePKP		10	05	15
		iSKS		10	11	46
		eS		10	13	02
		e		10	14	36
		iPKKP		10	16	59
				μ	s	
		SKS	E	0.9	8	
		S	N	3.1	14	

1959 May 12		M	E	12	19	
(cont.)		M	N	7.7	19	
		M	Z	16	19	
		△~11800 km~106°.				
	Ki	ePP		10	05	54
		eSKS		10	11	49
		iS		10	13	28
		iPS		10	15	25
		iPKKP		10	16	42
		iSS		10	21	18
				μ	s	
		PP	E	1.4	7	
		PP	Z	1.8	7	
		S	N	1.3	11	
		PKKP	z′	0.1	1.3	
		M	E	8.1	17	
		M	N	4.0	18	
		M	Z	7.0	17	
		△~12000 km~108°.				
	Sk	ePP		10	05	26
		i(PKKP)		10	17	04
	Gb	iPP		10	05	05
	Salta Province, Argentina. Magn.=6.8 (Up, Ki).					
» 12	Sk	iP		13	14	31
	Ionian Islands.					
» 12	Up	iP		21	42	26
	Sk	iP		21	42	25
» 12	Up	iP		21	45	01
	Sk	iP		21	45	45
	Ionian Islands.					
» 12	Up	iP		21	51	27 D
		i		21	51	44
		i		21	54	24
		eP′P′		22	19	39
				μ	s	
		P	z′	0.1	0.5	
		M	E	1.0	18	
		M	N	1.3	18	
		M	Z	1.7	21	
	Ki	eP		21	50	34
		iPcP		21	51	19
				μ	s	
		P	z′	0.1	1.3	
		M	E	1.8	19	
		M	N	1.5	17	
		M	Z	1.4	17	
	Sk	iP		21	51	07
		iPcP		21	51	39
	Gb	iP		21	51	48
	Aleutian Islands. Magn.=5.8 (Up, Ki).					
» 12	Up	iP		22	11	01C
		i		22	11	03
		i(pP)		22	11	15

1959 May 12 (cont.)		P	z′	μ 0.3	s 1.0	
		M	E	1.4	21	
		M	N	3.2	21	
		M	Z	2.6	18	
	Ki	iP		22	10	08
		i		22	10	41
		iPcP		22	10	53
		M	E	μ 3.2	s 17	
		M	N	2.3	18	
		M	Z	2.9	18	
	Sk	iP		22	10	41
		iPcP		22	11	13
	Gb	iP		22	11	23
		i(pP)		22	11	37
	Aleutian Islands.					
» 12	Ki	iP		22	44	49
	Honshu, Japan.					
» 13	Gb	iPKP		01	07	32 D
	South of Fiji Islands (h ~ 550 km).					
» 13	Up	iP		12	15	55 D
» 13	Ki	iP		13	46	21
	Sk	iP		13	46	39
» 13	Up	iP		18	26	00
		i		18	26	03
	Sk	iP		18	25	53
» 14	Up	iP		01	00	31
		M	E	μ 1.0	s 10	
		M	N	0.9	10	
		M	Z	0.8	10	
	Ki			—		
		M	E	μ 0.9	s 12	
		M	N	0.5	11	
		M	Z	0.7	11	
	Sk	iP		01	01	15 C
	Gb	iP		01	00	22
	Aegean Sea.					
» 14	Up	iP		01	01	22
		i		01	01	32
	Ki	iP		01	01	23
		P	z′	μ 0.2	s 1.5	
		M	E	0.7	19	
		M	N	0.4	20	
		M	Z	0.9	22	
	Sumatra.					
» 14	Up	iP		05	36	39
	Ki	iP		05	35	43 C
	Sk	iP		05	36	10
	Alaska.					

1959 May 14	Up	eP		06	32	27
		i		06	32	40
	Ki	iP		06	33	35
	Sk	iP		06	33	05
	Gb	eP		06	32	13
	Crete.					
» 14	Up	iP		06	42	19 D
		i		06	42	25
		iS		06	46	40
		i		06	46	47
		P	N	μ 2.4	s 6	
		P	Z	3.5	7	
		P	Z′	0.6	0.8	
		S	E	19	12	
		S	N	6.0	6	
		S	Z	3.2	6	
		M	E	41	14	
		M	N	27	13	
		M	Z	21	12	
	△ = 2800 km = 25°.					
	Ki	iP		06	43	29
		i		06	43	37
		i(PPP)		06	44	46
		iS		06	48	41
		P	N	μ 0.5	s 7	
		P	Z′	0.7	0.9	
		S	E	4.3	10	
		S	N	2.1	10	
		S	Z	1.2	8	
		M	E	32	12	
		M	N	24	13	
		M	Z	35	14	
	△ = 3650 km = 33°.					
	Sk	iP		06	42	59
		i		06	43	03
	Gb	iP		06	42	08 D
	Crete. Magn. = 6.2 (Up, Ki). P and S are multiple, the later phases having the largest amplitudes.					
» 14	Sk	iPKP		11	01	07
	New Hebrides Islands (h ~ 100 km).					
» 14	Ki	iP		11	32	59
	Sk	iP		11	32	30
	Gb	eP		11	31	42
	Crete.					
» 14	Ki	iPKP		12	08	20
	Sk	ePKP		12	08	30
	New Hebrides Islands (h ~ 100 km).					
» 14	Ki	iPKP		13	38	25
	Sk	iPKP		13	38	37
	New Hebrides Islands (h ~ 150 km).					

1959 May 14	Up	i(P)		15	15	25
	Gb	i(P)		15	12	58
» 14	Up	iP		17	21	54
	Sk	iP		17	21	51
» 14	Up	iP		17	43	06
		i		17	43	20
	Sk	eP		17	43	04
		i		17	43	19
	Gb	iP		17	43	30
	Ryukyu Islands.					
» 14	Up	iP		19	26	55
		eS		19	30	41
		iRg		19	34	11
		S	E	μ 0.2	s 6	
		S	N	0.4	8	
		M	E	1.3	12	
		M	N	1.5	10	
		M	Z	1.9	9	
	△ = 2200 km = 20°.					
	Ki	iP		19	28	09
		eS		19	33	04
		eLg2		19	38	03
		M	E	μ 1.5	s 12	
		M	N	0.7	11	
		M	Z	1.0	12	
	△ = 3100 km = 28°.					
	Sk	iP		19	27	39 C
	Gb	eP		19	26	44
	Aegean Sea.					
» 14	Sk	iP		21	13	36
» 14	Ki	eL		21	28	
		M	E	μ 0.8	s 12	
		M	N	0.9	16	
		M	Z	0.6	14	
	Iran.					
» 15	Up	iP		01	41	00
		i		01	41	02
	Gb	iP		01	41	23
	Kamchatka.					
» 15	Up	i(P)		07	56	16
» 15	Sk	eP		08	01	55
		i		08	02	06
	Guatemala (h ~ 100 km).					
» 15	Up	iP		14	55	37
		i		14	55	48
	Sk	iP		14	55	20 D
		i		14	55	30
	Mexico.					

1959 May 15	Up	iP		22	32	46 D
	Kurile Islands.					
» 16	Ki	iP		05	06	57
	Alaska.					
» 16	Up	iPKP		06	35	09
		i		06	35	35
		i		06	36	37
		M	E	μ 4.3	s 22	
		M	N	4.5	22	
		M	Z	4.1	21	
	△ ~ 12800 km ~ 115°.					
	Ki			—		
		M	E	μ 4.1	s 21	
		M	N	6.8	24	
	Sk	ePKP		06	35	05
		iPP		06	36	20
	Gb	ePKP		06	35	15
		iPP		06	36	31
	New Britain (h ~ 60 km).					
» 16	Ki	eP		08	25	00
	Sk	iP		08	24	21
	Gb	eP		08	23	33
	Crete.					
» 16	Up	iP		12	05	56
		i		12	06	08
	Gb	iP		12	06	14
	(Kamchatka).					
» 17	Up	iP		07	26	35
» 17	Up	iP		09	48	32
		i		09	48	54
» 17	Up	iP		19	26	10
	Ki	eP		19	25	16
	Kamchatka.					
» 18	Up	iP		07	35	00 C
		i		07	35	11
		P	z′	μ 0.1	s 0.5	
	Ki	iP		07	34	06 C
		i		07	34	17
		P	z′	μ 0.2	s 0.9	
	Sk	iP		07	34	40 C
	Aleutian Islands. Magn. = 6.1 (Up, Ki).					
» 18	Up	iPKP		19	20	31
		iPKP2		19	20	46
	Ki	iPKP		19	20	14
	Sk	iPKP		19	20	28 D
	New Zealand.					

1959						
May 19	Up	iP		03	31	48
				μ	s	
		P	z′	0.1	0.5	
» 19	Up	iP		08	03	19
				μ	s	
		M	E	0.3	17	
		M	N	0.8	19	
	Ki	eP		08	03	04
				μ	s	
		M	E	0.9	17	
		M	Z	0.7	17	
	Sk	iP		08	03	28
	Mindoro, Philippine Islands.					
» 19	Up	iP		15	25	38
		iPP		15	27	18
		eS		15	32	02
		iLg2		15	41	23
				μ	s	
		P	z′	0.1	0.6	
		PP	E	0.4	3	
		PP	Z	0.3	3	
		S	E	0.3	7	
		S	N	0.5	6	
		M	E	6.5	20	
		M	N	16	20	
		M	Z	8.1	17	
		△=4800 km=43°.				
	Ki	iP		15	25	53
		iPP		15	27	37
		eS		15	32	26
				μ	s	
		S	E	0.4	12	
		S	N	0.3	9	
		M	E	3.1	15	
		M	N	1.8	13	
		M	Z	2.1	9	
		△=4950 km=44½°.				
	Sk	iP		15	26	06
		i		15	26	10
	Afghanistan. Magn.=5.8 (Up, Ki).					
» 19	Up	iP		19	04	08
	Ki	iP		19	03	38
	Volcano Islands.					
» 20	Ki	eL		01	57	
				μ	s	
		M	E	0.4	20	
		M	Z	0.4	19	
	South Pacific Ocean.					
» 20	Up	i(P)		08	51	02
» 20	Up	iPg		09	59	29
		iSg		09	59	46
		i		09	59	50
		iL		09	59	55
				μ	s	
		L	z′	0.3	0.9	

1959						
May 20		△=140 km=1.3°.				
(cont.)	Sk	i(Sg)		10	01	48
	Explosion of 56 ton dynamite near Norrköping, Sweden, 58°38′N, 16°14′E. Origin time=09 59 03.					
» 20	Up	iP		10	22	03
	Ki	iP		10	21	10
	Aleutian Islands.					
» 20	Up	iP		11	37	27C
				μ	s	
		P	z′	0.1	0.6	
	Ki	iP		11	36	53C
				μ	s	
		P	z′	0.1	1.0	
	Sk	iP		11	37	24
	Japan (h∼450 km). Magn.=5.6 (Up, Ki).					
» 20	Ki	e(P)		12	53	11
» 20	Up	iP		16	42	06
		eS		16	46	20
				μ	s	
		S	N	0.6	7	
		M	E	0.6	10	
		M	N	1.5	10	
		M	Z	1.6	10	
		△=2650 km=24°.				
	Ki	iP		16	43	13
				μ	s	
		M	E	0.4	11	
		M	N	0.4	11	
		M	Z	0.5	11	
	Sk	iP		16	42	47
	Dodecanese Islands.					
» 20	Up	iP		19	46	08
				μ	s	
		P	z′	0.1	0.5	
		M	E	1.7	20	
		M	N	1.6	20	
		M	Z	3.0	19	
	Ki	iP		19	45	22
				μ	s	
		M	E	3.7	20	
		M	N	1.8	19	
		M	Z	2.3	18	
	Sk	iP		19	45	57
	Kurile Islands. Magn.=5.7 (Up, Ki).					
» 20	Up	iP		19	54	24D
		iS		19	58	35
		iLg2		20	02	07
				μ	s	
		P	z′	0.3	1.0	
		S	E	2.4	13	
		S	N	3.2	9	

1959						
May 20		M	E	3.8	17	
(cont.)		M	N	4.5	15	
		M	Z	6.1	15	
		△=2600 km=23½°.				
	Ki	iP		19	55	11D
		i		19	55	35
		eS		19	59	57
		eLg1		20	03	44
		i(Lg2)		20	04	22
				μ	s	
		P	E	0.4	8	
		P	N	0.3	9	
		P	z′	0.2	1.0	
		S	N	0.3	8	
		M	E	5.1	15	
		M	N	3.1	13	
		M	Z	5.8	14	
		△=3150 km=28½°.				
	Sk	iP		19	55	04
		i		19	55	32
	Georgia, U.S.S.R. Magn.=5.7 (Up, Ki). Extremely clear Lg2.					
» 20	Up	iP		22	16	44
	Kurile Islands.					
» 21	Up	iP		02	35	09
		i		02	35	22
	Ki	iP		02	34	49
	Luzon, Philippine Islands.					
» 21	Ki	iP		03	49	37
	Kodiak Island, Alaska.					
» 21	Ki	iP		07	01	45D
		iPcP		07	02	31
				μ	s	
		P	z′	0.2	0.6	
	Sk	iP		07	02	15C
		iPcP		07	02	50
	Aleutian Islands.					
» 21	Up	e		12	03	20
				μ	s	
		M	E	2.0	21	
		M	N	1.6	22	
		M	Z	3.2	22	
	Ki	i(PKP)		11	53	21
		i		11	54	13
		e		12	02	19
		e		12	03	48
		e		12	04	17
				μ	s	
		M	E	1.3	22	
		M	N	0.9	19	
		M	Z	1.6	23	
	Sk	e(PKP)		11	53	41
	Chile-Argentina (h∼60 km).					
» 21	Ki	iP		22	41	56
	Aleutian Islands.					

1959						
May 22	Up	iP		04	28	49
	Ki	eP		04	28	56
» 22	Up	iP		04	52	39
	Ki	iP		04	51	45
				μ	s	
		M	E	0.4	17	
		M	N	0.2	17	
		M	Z	0.3	16	
	Kamchatka.					
» 22	Up	iPKP		07	17	15
		i		07	17	24
	Ki	iPKP		07	16	51
		i		07	16	56
		i		07	17	09
				μ	s	
		PKP	z′	0.1	0.9	
	Sk	iPKP		07	17	09
		i		07	17	20
	New Zealand.					
» 22	Up	iP		08	41	33
				μ	s	
		P	z′	0.1	0.8	
	Ki	iP		08	41	25
	Sk	iP		08	41	48
	Burma.					
» 23	Up	iP		10	07	18
	Sk	iP		10	07	06
	Venezuela.					
» 24	Up	iP		00	20	39
	Ki	iP		00	20	45
	Sk	eP		00	20	23
	Puerto Rico.					
» 24	Up	iPKP		04	57	33
	Ki	iPKP		04	57	27
	Sk	iPKP		04	57	25
	Gb	iPKP		04	57	42
	Fiji Islands (h∼700 km).					
» 24	Up	iP		11	38	21
		i		11	38	29
				μ	s	
		P	z′	0.1	0.6	
		M	E	0.5	17	
		M	N	0.9	17	
		M	Z	0.9	19	
	Ki	iP		11	38	17
		i		11	38	26
		iS		11	46	31
				μ	s	
		S	N	0.4	7	
		M	E	0.4	18	
		M	N	0.8	19	
		M	Z	0.5	17	
		△=6600 km=59½°.				
	Sk	iP		11	38	36

1959 May 24 (cont.)		i		11	38	46
	Gb	iP		11	38	40
		i		11	38	49
	Bhutan-India.					
» 24	Up	iP		13	24	58
		iS		13	29	28
				μ	s	
		S	N	0.3	7	
		M	E	0.7	18	
		M	N	0.9	17	
		M	Z	0.8	17	
		△=2850 km=25½°.				
	Ki	iP		13	26	09
				μ	s	
		M	E	1.3	16	
		M	N	0.6	15	
		M	Z	0.6	13	
	Sk	iP		13	25	26
	Gb	iP		13	24	29
	Algeria.					
» 24	Up	iP		19	30	17 D
		ipP		19	30	40
		iPP		19	33	41
		ipPP		19	34	02
		iS		19	40	37
		iPKKP		19	48	33
		eP′P′		19	56	17
		eP′P′P′		20	16	57
				μ	s	
		P	E	1.9	6	
		P	N	1.9	6	
		P	Z	7.6	7	
		P	Z′	0.6	0.9	
		pP	E	2.8	6	
		pP	N	2.7	5	
		pP	Z	9.4	6	
		PP	Z′	0.2	1.1	
		S	E	17	9	
		S	N	11	8	
		M	E	18	25	
		M	N	15	23	
		M	Z	25	24	
		△~9600 km~86½°.				
	Ki	iP		19	30	03 D
		ipP		19	30	25
		i(PP)		19	33	38
		iS		19	40	19
		iPKKP		19	48	22
		i		19	48	40
		iP′P′		19	56	26
		eP′P′P′		20	16	52
				μ	s	
		P	E	5.9	6	
		P	N	3.2	6	
		P	Z	14	6	
		P	Z′	12	3.0	
		pP	Z	22	6	
		pP	Z′	14	3.0	
		(PP)	Z	4.6	6	

1959 May 24 (cont.)		S	E	38	11	
		S	N	12	10	
		S	Z	6.1	10	
		M	E	20	23	
		M	N	12	23	
		M	Z	22	22	
		△~9350 km~84°.				
	Sk	iP		19	29	59 D
		ipP		19	30	20
		iPKKP		19	48	24
		i		19	48	42
		eP′P′		19	56	20
		iP′P′P′		20	16	46
	Gb	iP		19	30	10 D
		ipP		19	30	32
		iP′P′		19	56	20
		iP′P′P′		20	16	53
	Oaxaca, Mexico. h=90 km (Up, Ki, Sk, Gb). Magn.=7.2 (Up, Ki); the average magn. for Up is 6.9, for Ki 7.6. This earthquake has given records which could be very useful in a study of core phases, and is the only case known so far with P′P′P′ recorded at Swedish stations.					
» 25	Up	iP		19	31	00 D
				μ	s	
		P	Z′	0.2	0.6	
	Ki	iP		19	30	54
	Sk	iP		19	31	16
	Gb	iP		19	31	22
	Assam.					
» 26	Up	iP		04	24	41 C
				μ	s	
		P	Z′	1.1	0.8	
		M	E	2.2	17	
		M	N	2.6	21	
		M	Z	1.7	15	
	Ki	iP		04	24	12
		ipP		04	24	32
				μ	s	
		P	Z′	0.6	1.0	
		M	E	0.9	15	
		M	Z	1.5	19	
	Sk	iP		04	24	42
	Gb	iP		04	25	01
	Ryukyu Islands. h=80 km (Ki). Magn.=6.7 (Up, Ki).					
» 26	Up	iP		05	38	53 C
				μ	s	
		P	Z′	0.1	1.0	
	Ki	iP		05	39	02
				μ	s	
		P	Z′	0.2	0.8	
	Sk	iP		05	38	39 D
	Leeward Islands.					

1959 May 26	Up	iP		06	43	36 C
				μ	s	
		P	Z′	0.3	0.7	
		M	E	2.6	17	
		M	Z	2.7	17	
	Ki	iP		06	43	45 C
		iLg1		06	57	17
		eLg2		06	58	14
				μ	s	
		M	E	3.8	11	
		M	N	2.8	16	
		M	Z	3.6	10	
	Sk	iP		06	44	02 C
		iPP		06	45	45
	Gb	iP		06	43	58
	Afghanistan-Tadzhik.					
» 26	Ki	eP		13	30	58
	Sk	iP		13	31	12
		iS		13	32	59
		△=1100 km=10°.				
	Jan Mayen.					
» 26	Up	iP		18	06	01
		iPP		18	06	21
	Sk	iP		18	06	44 D
	Greece.					
» 27	Up	iP		10	19	49
				μ	s	
		P	Z′	0.1	0.6	
	Sk	iP		10	20	29
	Gb	iP		10	19	33 D
	Ionian Islands.					
» 27	Up	iP		14	01	38
	Ki	iP		14	01	15
	Formosa.					
» 27	Up	iP		20	41	50
		i		20	41	58
		e		20	43	32
		i		20	44	56
		iLg2		20	46	09
		e		20	46	35
		iRg		20	47	00
				μ	s	
		M	E	2.6	9	
		M	N	1.8	9	
		M	Z	1.0	11	
	Ki	iP		20	43	30
		eS		20	47	38
		e(Lg1)		20	50	39
				μ	s	
		P	Z′	0.1	1.0	
		M	E	8.4	13	
		M	N	1.2	12	
		M	Z	1.6	13	
		△=2550 km=23°.				
	Sk	iP		20	42	43
		i		20	42	46

1959 May 27 (cont.)		i		20	42	53
		iLg2		20	48	36
	Gb	iP		20	41	36
		i		20	46	12
	Hungary-Rumania. Clear Lg2 phases (Up, Sk).					
» 28	Ki	iP		04	19	14
	Sk	eP		04	18	58
	Colombia.					
» 28	Up	iP		15	27	18
	Ki	iP		15	27	03
	Luzon, Philippine Islands.					
» 28	Sk	iP		19	20	15
	Gb	iP		19	19	21
	Algeria.					
» 29	Ki	eP		01	04	13
	Mariana Islands (h~100 km).					
» 29	Up	iPKP		11	01	56
		i		11	02	01
		ipPKP		11	02	25
		i		11	04	53
		iSKP		11	05	21
		iPKS		11	05	29
		isSKP		11	06	05
		i		11	11	15
		e		11	16	45
				μ	s	
		SKP	Z′	0.1	0.7	
		M	E	1.2	21	
		M	N	1.7	21	
		M	Z	1.8	22	
		△~14900 km~134°.				
	Ki	iPKP		11	01	45
		ePP		11	03	44
		e		11	04	09
		iPKS		11	05	11
		e		11	10	29
		i		11	18	28
				μ	s	
		PKP	Z′	0.3	1.1	
		M	E	2.1	25	
		M	N	0.7	20	
		M	Z	1.9	23	
		△~14100 km~127°.				
	Sk	ePKP		11	01	48
		i		11	01	57
		eSKP		11	05	13
	Gb	iPKP		11	02	06
		ipPKP		11	02	35
		iSKP		11	05	24
	New Hebrides Islands. h=120 km (Up, Gb).					
» 29	Ki	eP		12	40	33
	Mariana Islands.					

1959 May 29	Up	iP	18	40	11
		i	18	40	22
	Ki	iP	18	39	20
	Sk	eP	18	39	56

Kamchatka.

» 29	Sk	i(P)	22	43	43
» 29	Up	iP	23	53	44
		i(PP)	23	55	10
	Ki	iP	23	54	27
		iPP	23	55	51
	Gb	iP	23	53	55C
		i(PP)	23	55	16

Iran.

» 30	Up	e	03	18	52
		iSg	03	18	55
		△=830 km=7.5°.			
	Ki	iPg	03	15	40
		iS*	03	16	11
		eSg	03	16	16
		△=300 km=2.7°.			
	Sk	ePg	03	16	01
		iSg	03	16	48
		△=400 km=3.6°.			

Off coast of central Norway, 67.3°N, 13.4°E. Origin time=03 14 48.

» 30	Up	iP	12	30	27
	Ki	iP	12	30	34
» 30	Ki	iPKP	17	28	36

New Zealand.

» 31	Up	iP	05	48	33
	Ki	iP	05	48	19
	Sk	eP	05	48	02

Cayman Islands.

» 31	Ki	i(P)	07	47	30
» 31	Up			—	
				μ	s
		M	E	1.0	18
		M	N	1.4	18
		M	Z	1.5	19
	Ki	e(PS)	09	56	54
				μ	s
		M	E	1.8	18
		M	N	0.8	19
		M	Z	1.9	20

Solomon Islands.

» 31	Up	iP	12	19	17
		i	12	19	24
		iS	12	21	57
		iLg2	12	23	42
				μ	s
		P	z′	0.4	0.5

1959 May 31 (cont.)		S	z′	0.2	0.5
		M	E	2.4	13
		M	N	4.3	12
		M	Z	3.7	14
		△=1600 km=14½°.			
	Ki	iP		12 20	43
		i		12 20	54
		iPP		12 21	10
		iS		12 24	44
		i		12 24	58
		eLg1		12 27	26
				μ	s
		P	z′	0.3	1.0
		M	E	2.9	7
		M	N	2.3	14
		M	Z	2.6	14
		△=2450 km=22°.			
	Sk	iP		12 20	15
		i		12 20	20
		i		12 24	22
		iLg1		12 25	49
		iLg2		12 26	09
	Gb	iP		12 19	23
		iS		12 22	17
		iLg2		12 23	56
		△=1650 km=15°.			

Rumania. Extremely clear channel waves.

» 31	Up	eP		13 07	55
		i		13 08	36
				μ	s
		M	E	0.5	17
		M	N	0.6	19
	Ki	iP		13 08	34
				μ	s
		M	E	0.7	16
		M	N	0.6	18
	Sk	iP		13 08	33
	Gb	iP		13 08	09 D

Iran.

» 31	Up	eP		13 14	00
	Ki	iP		13 14	34

Iran.

June 1	Ki	iP		09 03	05
	Sk	iP		09 02	34

Crete.

» 1	Up	iSg		10 26	25
		△=710 km=6.4°.			
	Ki	ePg		10 24	01
		iSg		10 24	46
		△=380 km=3.4°.			
	Sk	iPg		10 23	44C
		iSg		10 24	16
		△=280 km=2.5°.			

Nordlands Fylke, Central Norway, 66°N, 13½°E. Origin time= 10 22 54.

1959 June 1	Up	iP		11 51	22
» 1	Up	iPKP		12 50	28
		i		12 50	30
	Ki	iPKP		12 50	17
	Sk	iPKP		12 50	28
	Gb	iPKP		12 50	37

Solomon Islands (h ~ 400 km).

» 1	Up	iP		15 08	11
	Ki	eP		15 08	27
» 1	Up	iP		16 00	36
	Sk	i(P)		16 00	54
» 1	Up	iP		17 19	34
				μ	s
		P	z′	0.1	0.5
» 1	Up	iPP		17 27	19
				μ	s
		PP	Z	0.7	7
		M	E	0.4	14
		M	N	0.8	19
		M	Z	0.6	19
		△~13100 km~118°.			
	Ki	ePP		17 26	39
		ePS		17 36	03
				μ	s
		PP	Z	0.4	6
		M	E	0.8	19
		M	N	0.3	17
		M	Z	0.9	19
		△~12350 km~111°.			

Solomon Islands (h ~ 100 km).

» 1	Up	iPg		18 13	07 D
		iSg		18 13	23
				μ	s
		Pg	z′	0.1	0.5
		△=130 km=1.2°.			
	Sk	eSg		18 15	44
		△=610 km=5.5°.			

The Baltic Sea, 59.8°N, 20.0°E. Origin time=18 12 43. Explosion?

» 1	Up	iPg		18 17	12 D
		iSg		18 17	28
				μ	s
		Pg	z′	0.1	0.5
		Sg	z′	0.1	0.5
		△=130 km=1.2°.			
	Ki	eSg		18 21	14
		e		18 22	08
		△=900 km=8.1°.			
	Sk	eSg		18 19	46
		△=600 km=5.4°.			

The Baltic Sea, 59.8°N, 20.0°E. Origin time=18 16 48. Explosion?

1959 June 1	Up	iPg		18 28	27 D
		iSg		18 28	42
				μ	s
		Pg	z′	0.2	0.5
		Sg	z′	0.1	0.5
		△=130 km=1.2°.			
	Ki	e		18 32	43
	Sk	eSg		18 31	00
		△=600 km=5.4°.			

The Baltic Sea, 59.8°N, 20.0°E. Origin time=18 28 02. Explosion? In the last three records there were also clear surface waves of short period recorded by Benioff z′ at Uppsala.

» 1	Ki	iP		20 35	03
	Sk	iP		20 35	40

Kamchatka.

» 1	Ki	eP		22 59	10
	Sk	eP		22 59	41

Mariana Islands.

» 2	Up	iP		00 58	54
		i		00 59	02
				μ	s
		M	E	1.7	18
		M	N	1.0	17
		M	Z	1.4	18
	Ki	iP		00 58	21
		i		00 58	35
		eLi		01 21	09
		eLg1		01 22	39
		eLg2		01 24	40
				μ	s
		M	E	2.4	18
		M	N	1.3	21
		M	Z	2.4	20
	Sk	eP		00 58	52

Kyushu, Japan. Magn.=5.6 (Up, Ki).

» 2	Ki	iP		02 09	33

North Celebes (h ~ 200 km).

» 2	Up	eP		02 49	47
		i		02 49	55
		eS		02 59	43
				μ	s
		P	z′	0.1	1.0
		M	E	1.8	19
		M	N	3.1	19
		M	Z	3.9	20
		△=8700 km=78½°.			
	Ki	iP		02 49	27
		i		02 49	36
		ePP		02 52	15
		eS		02 59	03
				μ	s
		P	z′	0.2	1.1

1959 June 2 (cont.)		S	E	1.3	12		
		S	N	0.5	12		
		M	E	3.6	22		
		M	N	3.5	22		
		M	Z	1.9	19		
		△=8350 km=75°.					
	Sk	eP		02	50	00	
	Batan Islands. Magn.=5.9 (Up, Ki).						
» 2	Ki	iP		03	20	46	
» 2	Up	iPKP		03	42	49	
		i		03	43	02	
				μ	s		
		PKP	Z′	0.2	0.9		
	Ki	ePKP		03	42	38	
	Tonga Islands.						
» 2	Up	iPKP		03	51	31 C	
		i		03	51	44	
				μ	s		
		PKP	Z′	0.2	0.7		
		M	E	0.4	20		
		M	N	1.1	21		
		M	Z	1.0	20		
	Ki	iPKP		03	51	19	
		ePP		03	53	58	
				μ	s		
		M	E	0.7	19		
		M	N	0.9	20		
		M	Z	1.3	21		
	Sk	iPKP		03	51	31	
	Tonga Islands.						
» 2	Up	iPKP		04	07	51	
	Tonga Islands.						
» 2	Up	iPKP		04	11	43 C	
		i		04	12	57	
				μ	s		
		PKP	Z′	0.2	0.7		
	Ki	ePKP		04	11	30	
	Sk	ePKP		04	11	41	
	Tonga Islands.						
» 2	Up	eP		05	09	23	
		i		05	09	30	
		iS		05	19	18	
				μ	s		
		S	E	2.0	10		
		S	N	1.4	10		
		M	E	9.8	15		
		M	N	22	15		
		M	Z	15	19		
		△=8700 km=78½°.					
	Ki	iP		05	08	59	
		i		05	09	03	
		e		05	13	38	
		eS		05	18	33	

1959 June 2 (cont.)				μ	s		
		P	Z′	0.1	1.0		
		S	E	2.1	11		
		S	N	1.1	11		
		M	E	19	23		
		M	N	13	21		
		M	Z	5.8	22		
		△=8350 km=75°.					
	Sk	iP		05	09	29	
		i		05	09	34	
	Batan Islands. Magn.=6.4 (Up, Ki).						
» 2	Up	eP		05	54	39	
				μ	s		
		M	E	3.3	16		
		M	N	4.5	15		
		M	Z	3.8	16		
	Ki	iP		05	54	15	
		i		05	54	19	
				μ	s		
		P	Z′	0.1	1.0		
	Sk	eP		05	54	45	
	Batan Islands. Magn.=6.0 (Up, Ki).						
» 2	Up	iPKP		06	01	18	
				μ	s		
		PKP	Z′	0.1	1.5		
		M	E	1.8	19		
		M	N	1.1	18		
		M	Z	1.7	18		
	Ki	iPKP		06	01	26	
				μ	s		
		PKP	Z′	0.3	1.6		
		M	E	0.7	18		
		M	N	0.5	17		
		M	Z	0.9	17		
	Sk	iPKP		06	01	16	
	Chile-Argentina (h ~ 150 km).						
» 2	Up	iPg		15	22	17	
		i		15	22	20	
		iSg		15	22	33	
		△=130 km=1.2°.					
	Sk	eSg		15	24	49	
	The Baltic Sea, 59.8°N, 20.0°E. Origin time=15 21 53. Explosion?						
» 2	Up	iPKP		17	38	03	
	Sk	iPKP		17	37	43	
	North Island, New Zealand (h ~ 200 km).						
» 2	Sk	iP		17	46	44	
» 2	Ki	eP		19	25	14	
	Formosa.						

1959 June 3	Up	i		04	07	00	
		eSKS		04	07	14	
	Ki	eP		03	56	43	
	Sk	iP		03	56	27	
	Colombia.						
» 3	Up	iP		04	08	27	
	Ki	eP		04	08	12	
» 3	Up	iP		05	54	28	
				μ	s		
		P	Z′	0.1	1.0		
	Ki	iP		05	53	34	
				μ	s		
		P	Z′	0.3	1.3		
	Sk	iP		05	54	05 D	
	Gb	iP		05	54	(39)	
	Aleutian Islands.						
» 3	Up	iP		08	46	25	
	Ki	iP		08	45	30	
		i(pP)		08	45	44	
	Kamchatka.						
» 3	Ki	iP		11	51	09	
	Honshu, Japan (h ~ 360 km).						
» 4	Sk	eP		00	01	39	
» 4	Up	eP		02	10	38	
	Ki	eP		02	10	36	
				μ	s		
		P	Z′	0.2	2.0		
	Sk	eP		02	10	25	
	Costa Rica.						
» 4	Up	iP		12	41	57	
		i(sP)		12	42	36	
	Ki	iP		12	41	01	
		isP		12	41	46	
	Sk	iP		12	41	29 D	
		i		12	42	26	
	Gb	iP		12	42	10 D	
	Cook Inlet, Alaska (h ~ 100 km).						
» 4	Up	i(P)		15	52	11	
» 4	Up	iPg		16	48	30	
		iSg		16	48	33	
		iL		16	48	42	
				μ	s		
		Sg	Z′	0.2	0.5		
		△=30 km=0.3°.					
	Probably explosion.						
» 4	Up	iP		16	52	56	
» 4	Up	iP		18	23	01	
» 4	Up	iP		19	30	49	

1959 June 4	Up	iPKP		21	53	36	
	Gb	iPKP		21	53	46	
	Tonga Islands.						
» 4	Ki	iP		21	56	00	
» 5	Ki	iP		09	44	55	
	Sk	i(P)		09	44	45	
» 5	Up	i(P)		12	26	31	
» 5	Sk	iP		20	15	47	
	Crete.						
» 5	Ki			—			
				μ	s		
		M	E	0.8	19		
		M	N	0.3	18		
		M	Z	1.2	20		
	Sk	eP		20	49	37	
	Nicaragua (h ~ 100 km).						
» 6	Up	iPKP		11	36	01	
		i		11	36	07	
	Sk	iPKP		11	35	55	
	Kermadec Islands.						
» 7	Up	iP		08	43	34 D	
	Ki	eP		08	44	55	
» 7	Up	iP		08	47	34 D	
	Ki	iP		08	47	17	
	Sk	eP		08	47	52	
	Samar, Philippine Islands.						
» 7	Up	eP		09	12	58	
		i		09	13	07	
	Ki	eP		09	13	35	
	Sk	iP		09	13	33	
	Socotra Island.						
» 7	Up	iP		10	25	57	
» 7	Up	iP		13	50	25	
		i		13	50	36	
		iS		13	59	08	
				μ	s		
		S	E	0.7	10		
		S	N	0.9	9		
		M	E	2.0	21		
		M	N	2.1	21		
		M	Z	1.7	18		
		△=7350 km=66°.					
	Ki	iP		13	51	08	
		i		13	51	18	
		iS		14	00	36	
				μ	s		
		P	Z′	0.4	2.0		
		S	E	0.7	9		
		S	N	0.7	10		
		M	E	1.2	18		

1959 June 7 (cont.)		M	N	1.6	20	
		M	Z	2.9	21	
		△=8150 km=73½°.				
	Sk	iP		13	50	36
		i		13	50	49
	Gb	iP		13	50	05
	Atlantic Ocean. Magn.=6.1 (Up, Ki).					
» 7	Gb	iP		14	04	55
» 7	Sk	iP		14	23	09
	Greece.					
» 9	Ki	iP		04	43	26
	Rhodes Island.					
» 9	Up			—		
				μ	s	
		M	E	0.9	16	
		M	N	1.5	15	
		M	Z	1.3	14	
	Ki	iP		11	27	39
				μ	s	
		M	E	0.6	11	
		M	N	0.4	11	
		M	Z	0.5	10	
	Turkey.					
» 9	Up	iPKP		15	13	20
		i		15	13	29
	Ki	ePKP		15	13	02
	Sk	iPKP		15	13	15
	Kermadec Islands.					
» 9	Ki	iPKP		23	29	51
	Southwest of Bouvet Island.					
» 10	Up	iP		04	21	23 D
		i		04	21	34
		iS		04	25	45
				μ	s	
		P	Z	0.6	4	
		P	Z′	0.1	0.5	
		S	E	1.3	8	
		S	N	2.4	8	
		M	E	1.5	10	
		M	N	2.4	12	
		M	Z	2.8	13	
		△=2700 km=24½°.				
	Ki	iP		04	22	33
		i		04	22	36
		e(Lg2)		04	33	48
				μ	s	
		P	Z′	0.3	0.8	
		M	E	3.6	14	
		M	N	2.0	13	
		M	Z	2.1	13	
	Sk	iP		04	22	02 D
	Gb	iP		04	21	14 D
	Crete. Magn.=5.7 (Up, Ki).					

1959 June 10	Up	iP		04	35	04
		i		04	35	10
				μ	s	
		M	N	0.9	18	
	Ki	iP		04	34	59
				μ	s	
		M	N	0.6	17	
	Sk	iP		04	35	21
	Tibet.					
» 10	Ki	iP		06	48	37
	Turkey.					
» 10	Up	iP		10	02	21
	Ki	iP		10	02	04
	Mindoro, Philippine Islands (h ~ 100 km).					
» 10	Sk	i(P)		13	16	35
» 11	Up	iPKP		00	14	12 D
				μ	s	
		PKP	Z′	0.1	0.5	
	Ki	ePKP		00	13	59
		iPP		00	16	44
	Gb	iPKP		00	14	24 D
	Tonga Islands.					
» 11	Up	iPKP		01	29	03
	Ki	ePKP		01	28	54
	Gb	iPKP		01	29	15
	Tonga Islands.					
» 11	Ki	eP		08	31	31
	Pamir.					
» 11	Ki	iP		18	21	07
	Turkey.					
» 11	Up	iP		19	48	30
» 11	Up	iP		21	14	30
				μ	s	
		P	Z′	0.1	0.6	
	Sk	iP		21	15	09
	Gb	iP		21	14	12
	Ionian Sea.					
» 12	Up	iP		00	57	02
	Ki	iP		00	56	09
	Gb	iP		00	57	15 C
	Aleutian Islands.					
» 12	Up	iPKP		12	04	15
	Sk	iPKP		12	04	07 C
	Kermadec Islands.					
» 12	Up	iP		13	23	24
		iPcP		13	23	56
	Ki	iP		13	22	33
	Okhotsk Sea. Deep.					

1959 June 13	Up	iP		07	24	36
» 13	Up	iP		12	07	33
				μ	s	
		P	Z′	0.1	0.5	
	Ki	iP		12	08	34
				μ	s	
		P	Z′	0.3	1.0	
	Sk	iP		12	08	11
	Gb	iP		12	07	31
	Turkey.					
» 13	Up	iPKP		13	17	53 D
		i		13	17	58
	Sk	iPKP		13	17	47
	Kermadec Islands.					
» 13	Up	iSg		14	10	55
		△=780 km=7.0°.				
	Sk	eSn		14	09	21
		iSg		14	09	50
		△=560 km=5.0°.				
	Gb	i		14	09	54
		iSg		14	10	00
		△=590 km=5.3°.				
	Off southwest coast of Norway, 60.9°N, 3.7°E. Origin time= 14 07 04.					
» 13	Up	iP		16	13	49
		i		16	13	52
	China.					
» 13	Up	iP		21	59	59
		i		22	00	03
		i		22	00	09
		iS		22	02	32
		iLg2		22	04	20
				μ	s	
		M	E	2.2	10	
		M	N	1.3	6	
		△=1550 km=14°.				
	Ki	iP		22	01	37
				μ	s	
		P	Z′	0.1	1.2	
	Sk	iP		22	00	47
	Gb	e(P)		21	59	33
		i		22	03	27
	Austria-Italy. Very clear Lg2 at Uppsala.					
» 14	Up	i(P)		00	26	23
		iPP		00	30	27
		i		00	31	30
		iSKS		00	36	28
		isSKS		00	37	16
		esS		00	38	38
		iSP		00	39	26
		isPS		00	40	17
		i		00	42	29
		i		00	43	06

1959 June 14 (cont.)				μ	s	
		PP	E	3.2	7	
		PP	Z	7.7	8	
		PP	Z′	1.2	2.0	
		SKS	E	21	12	
		SKS	N	5.5	10	
		M	E	24	19	
		M	N	19	20	
		M	Z	29	22	
		△ ~ 11800 km ~ 106°.				
	Ki	i(P)		00	26	33
		iPP		00	30	45
		ipPP		00	31	04
		iSKS		00	36	47
		isSKS		00	37	41
		iS		00	38	15
		i!		00	39	09
		iSP		00	39	57
		isPS		00	40	42
		eSS		00	45	46
		ePKKP		00	41	33
		i!		00	42	18
				μ	s	
		PP	Z	3.1	10	
		SKS	E	16	12	
		S	N	9.4	12	
		M	E	23	19	
		M	N	7.7	20	
		M	Z	23	19	
		△ ~ 12000 km ~ 108°.				
	Sk	i(P)		00	26	12
		iPKKP		00	41	47
	Gb	eP		00	25	52
		ipP		00	26	08
		iPP		00	29	58
		i		00	30	03
	Southwestern Bolivia (h ~ 100 km). Magn.=7.5 (Up, Ki). The P-phase is 20—23 sec later than the computed arrival time for Up, Ki, and Sk; the measured (P)-phases agree better with the calculated arrival times of pP.					
» 14	Ki	iPg		09	43	34
		iSg		09	43	53
		△=160 km=1.4°.				
» 14	Ki	iP		16	26	40 C
	Honshu, Japan.					
» 14	Up	iP		19	02	04
» 14	Ki	eP		20	57	18
		i		20	57	30
	Alaska.					
» 14	Up	iPKP		21	21	25
	Tonga Islands (h ~ 300 km).					

1959 June 15	Up	iP		02	50	36
		i(pP)		02	51	05
	Ki	iP		02	50	11
		i(pP)		02	50	41
				μ	s	
		P	z′	0.1	1.2	
	Sk	iP		02	50	40
		i(pP)		02	51	10

Formosa. (pP) could instead be the P-phase of another shock in the same location.

» 15	Ki	eP		06	54	40
» 15	Ki	iP		07	45	45

Aleutian Islands.

» 16	Up	iP		00	36	30
	Ki	eP		00	37	50
				μ	s	
		M	E	0.5	13	
		M	N	0.7	11	
		M	Z	0.8	11	
	Sk	iP		00	37	18
		i		00	37	33

Bulgaria.

» 16	Up				—	
				μ	s	
		M	E	0.7	12	
	Ki	iP		03	33	58
				μ	s	
		P	z′	0.1	1.4	
		M	E	0.5	11	
		M	N	0.4	9	
		M	Z	0.6	11	
	Sk	iP		03	33	37

Yugoslavia.

» 16	Up	i(P)		05	07	18
		i		05	07	42
» 16	Ki	iP		08	14	35
				μ	s	
		P	z′	0.2	1.5	

Chiapas, Mexico.

» 16	Ki	iP		14	19	30

Hokkaido, Japan (h ~ 40 km).

» 16	Up	iP		14	54	50C

Aleutian Islands.

» 16	Ki	iPg		15	37	51
		i		15	38	21
		iSg		15	38	23
				μ	s	
		Sg	z′	0.2	0.6	
		△=280 km=2.5°.				
	Sk	eSg		15	40	01
		△=600 km=5.4°.				

1959 June 16 (cont.)	Off coast of Norway, 69°N, 14°E. Origin time=15 37 01.					
» 17	Ki	eRg		12	48	43
				μ	s	
		M	E	0.3	10	
	Sk	iP		12	36	53

Albania-Yugoslavia.

» 17	Up	iLgl		19	51	18
	Ki	eSn		19	49	23
		iSg		19	49	39
		△=400 km=3.6°.				
	Sk	iPg		19	48	37
		iSg		19	49	13
		△=310 km=2.8°.				

Off coast of Norway, 66.5°N, 12.0°E. Origin time=19 47 40.

» 17	Ki	e		20	39	39
		iSg		20	39	51
	Sk	ePg		20	38	52
		iSg		20	39	27

Off coast of Norway (same location as for preceding shock). Origin time= =20 37 54.

» 17	Up	iPKP		21	04	48
	Ki	iPKP		21	04	34
	Sk	iPKP		21	04	45C

Santa Cruz Islands (h ~ 200 km).

» 18	Up	e(P)		02	04	03
» 18	Up	eL		08	13	
				μ	s	
		M	E	1.2	18	
		M	N	1.0	20	
		M	Z	2.6	20	
	Ki	eL		08	13	
				μ	s	
		M	E	0.7	18	
		M	Z	1.2	20	

Pacific Ocean.

» 18	Up	iP		15	41	53
		ipP		15	42	06
		eS		15	50	15
				μ	s	
		P	z′	0.4	1.3	
		pP	z′	1.1	1.6	
		S	E	6.6	12	
		M	E	120	23	
		M	N	110	21	
		M	Z	79	23	
		△=6950 km=62½°.				
	Ki	iP		15	40	59
		ipP		15	41	12
		iS		15	48	43

1959 June 18 (cont.)				μ	s	
		P	z′	0.5	1.5	
		pP	z′	0.5	1.5	
		S	E	5.2	14	
		S	N	3.1	14	
		M	E	110	20	
		M	N	49	18	
		M	Z	82	17	
		△=6100 km=55°.				
	Sk	iP		15	41	38
		ipP		15	41	51
		iPP		15	43	49
	Gb	iP		15	42	17

Kamchatka. h=50 km (Up, Ki, Sk). Magn.=6.7 (Up, Ki). Abnormally large surface waves.

» 18	Up	iP		16	09	06
				μ	s	
		P	z′	0.1	1.0	
	Ki	iP		16	08	10
	Sk	iP		16	08	48
		iPcP		16	09	32

Kamchatka.

» 19	Up	iP		12	09	06
	Ki	iP		12	09	53
	Sk	eP		12	09	30

Lake Edward, Central Africa.

» 19	Up	iP		14	05	58
		i		14	06	02
	Ki	eP		14	04	54
» 20	Up	iP		03	34	33C
» 20	Ki	iPP		10	24	46

Fiji Islands.

» 20	Up	eP		14	24	20
		i		14	25	27
		iPP		14	25	39
	Ki	eP		14	24	25
		iPP		14	25	52
				μ	s	
		M	E	0.5	11	
		M	N	0.5	14	
	Sk	eP		14	24	46
		i		14	26	07

Pamir.

» 20	Up	iP		16	50	57
				μ	s	
		P	z′	0.2	1.8	
	Ki	iP		16	51	20
				μ	s	
		P	z′	0.4	1.7	
	Sk	iP		16	50	50

Atlantic Ocean.

» 21	Up	iP		16	17	05
		i		16	17	16

1959 June 21 (cont.)	Ki	iP		16	16	27
	Sk	eP		16	16	59

Honshu, Japan.

» 21	Up	iPKP		23	45	27
		i		23	45	31
				μ	s	
		PKP	z′	0.1	0.7	
	Ki	iPKP		23	45	14
	Sk	iPKP		23	45	21
	Gb	iPKP		23	45	38D

Kermadec Islands.

» 22	Up	iP		21	17	19
» 23	Up	eP		10	53	00
		iLgl		11	07	17
				μ	s	
		M	E	0.4	9	
		M	N	1.0	19	
		M	Z	0.5	8	
	Ki	iP		10	52	46
		eLgl		11	05	58
				μ	s	
		M	E	0.7	12	
		M	N	0.2	9	
		M	Z	0.7	12	
	Sk	iP		10	53	13
		i		10	53	18

Sinkiang Province, China.

» 23	Up	iP		14	46	45
				μ	s	
		P	z′	0.2	1.0	
		M	E	0.6	17	
		M	N	0.9	17	
		M	Z	1.4	18	
	Ki	iP		14	46	09D
		eS		14	55	14
				μ	s	
		P	z′	0.2	1.0	
		S	E	0.3	7	
		S	N	0.2	6	
		M	E	0.7	18	
		M	N	0.7	17	
		M	Z	0.8	16	
		△=7700 km=69½°.				
	Sk	iP		14	46	19D
	Gb	iP		14	46	45

Nevada. Magn.=6.0 (Up, Ki).

» 23	Ki	eP		15	15	42
	Sk	iP		15	15	52

Nevada.

» 23	Sk	iP		15	25	08
» 23	Up	i(Sg)		16	15	14
		i		16	15	18
	Sk	e(Sg)		16	17	14

1959 June 23	Up	e(P)		16	29	54
» 24	Ki	iP		03	04	57
		i		03	04	59
				μ	s	
		P	z′	0.4	0.6	
» 24	Up	iP		04	34	48
	Ki	iP		04	33	53
	Sk	iP		04	34	31
	Kamchatka.					
» 24	Up	iP		04	37	23
				μ	s	
		M	E	0.6	20	
		M	N	0.6	20	
		M	Z	0.6	20	
	Ki	iP		04	36	30
				μ	s	
		M	E	0.7	22	
		M	N	0.3	20	
		M	Z	1.0	20	
	Sk	iP		04	37	06
	Gb	iP		04	37	47
	Kamchatka.					
» 24	Up	iP		07	27	22
	Ki	iP		07	26	43
				μ	s	
		M	E	0.3	18	
		M	N	0.2	14	
		M	Z	0.4	18	
	Sk	iP		07	27	16
	Honshu, Japan.					
» 24	Up	iP		16	09	41
	Iran.					
» 24	Up	iP		23	34	54C
	Ki	iP		23	34	20
» 25	Up	eP		01	16	14
		i		01	16	17
	Sk	iP		01	16	05
» 25	Ki	iP		01	45	27
» 25	Up	iP		03	20	21
		i		03	20	26
		i		03	23	09
				μ	s	
		P	z′	0.1	0.5	
	Ki	iP		03	20	29D
		i		03	20	31
				μ	s	
		P	z′	0.1	0.5	
	Sk	iP		03	20	47
		iPP		03	22	34
	Gb	iP		03	20	42
	Hindu Kush. Magn. = 6.0 (Up, Ki).					

1959 June 25	Up	iP		06	49	40
	Sk	eP		06	49	00
	South of Iceland.					
» 25	Up	iP		06	51	43C
		i		06	51	45
		iS		06	55	45
				μ	s	
		P	E	0.4	3	
		P	Z	0.3	3	
		P	z′	0.1	1.0	
		S	E	1.6	5	
		S	N	1.8	6	
		S	Z	1.3	5	
		M	E	4.7	19	
		M	N	3.7	20	
		M	Z	6.7	19	
		△ = 2450 km = 22°.				
	Ki	iP		06	51	36C
		i		06	51	38
		iS		06	55	40
				μ	s	
		P	E	1.0	7	
		P	Z	1.1	8	
		P	z′	1.0	2.3	
		S	E	3.2	5	
		S	N	2.9	7	
		S	Z	1.5	6	
		M	E	5.6	13	
		M	N	3.0	13	
		M	Z	5.8	13	
		△ = 2400 km = 21½°.				
	Sk	iP		06	51	06
		i		06	51	09
	Gb	iP		06	51	29
	South of Iceland. Magn. = 5.7 (Up, Ki). The multiple P waves, as evidenced by this earthquake, are quite typical on our records of Icelandic and North Atlantic earthquakes.					
» 25	Up	iP		07	21	23D
	Sk	iP		07	20	41
	South of Iceland.					
» 25	Up	iP		10	01	54
	Ki	iP		10	01	01
				μ	s	
		P	z′	0.1	1.1	
	Sk	iP		10	01	31
	Gb	iP		10	02	10
	Aleutian Islands.					
» 25	Up	iP		13	48	53
				μ	s	
		M	E	0.8	17	
		M	N	0.8	16	
		M	Z	0.8	17	
	Ki	iP		13	48	22D

1959 June 25 (cont.)				μ	s	
		M	E	1.2	19	
		M	N	0.5	18	
		M	Z	1.9	20	
	Sk	iP		13	48	53
	Ryukyu Islands.					
» 25	Up	eL		16	03	
				μ	s	
		M	E	0.3	18	
		M	N	0.2	20	
		M	Z	0.3	18	
	Ki	eL		16	01	
				μ	s	
		M	E	0.3	19	
		M	N	0.3	20	
		M	Z	0.5	20	
	(New Britain).					
» 25	Sk	ePKP		16	49	55
	New Zealand.					
» 26	Up	iP		00	16	53
	Aleutian Islands.					
» 26	Up	iP		00	17	31
	Ki	iP		00	16	38
	Sk	eP		00	17	11
	Aleutian Islands.					
» 26	Ki	eL		01	41	
				μ	s	
		M	E	0.3	19	
		M	N	0.3	20	
		M	Z	0.6	19	
» 26	Ki	iP		02	17	32
» 26	Up	iPKP		04	36	28
	Sk	iPKP		04	36	22
		i		04	36	30
	Gb	ePKP		04	36	(35)
		i		04	36	(44)
	Kermadec Islands.					
» 26	Up	eL		04	50	
				μ	s	
		M	E	0.4	22	
		M	Z	0.7	21	
	Ki	eL		04	51	
				μ	s	
		M	E	0.3	17	
		M	N	0.3	20	
		M	Z	0.6	19	
	Pacific Ocean, southwest of Galapagos Islands.					
» 26	Up	iP		05	14	15C
		iPcP		05	14	44
	Ki	iP		05	13	31
	Sk	iP		05	14	06

1959 June 26 (cont.)		iPcP		05	14	39
	Gb	iP		05	14	(35)
	Hokkaido, Japan.					
» 26	Up	iPKP		05	21	14
	Sk	iPKP		05	21	07
	Gb	ePKP		05	21	(20)
	Kermadec Islands.					
» 26	Up	iPKP		05	43	59C
		i		05	44	07
				μ	s	
		PKP	z′	0.1	0.6	
	Ki	ePKP		05	43	41
	Sk	iPKP		05	43	52
		i		05	44	00
	Gb	iPKP		05	44	05
		i		05	44	13
	Kermadec Islands.					
» 26	Up	iP		07	25	04
	Seismic?					
» 26	Up	iP		08	47	05
	Ki	iP		08	46	32D
				μ	s	
		P	z′	0.1	0.8	
	Sk	iP		08	47	02
	Gb	iP		08	47	(22)
	South of Honshu, Japan (h ~ 450 km).					
» 26	Up	iP		13	48	10
		i		13	48	23
		iS		13	50	51
		iLg1		13	52	35
				μ	s	
		P	z′	0.2	0.6	
	Ki	iP		13	49	34
		i		13	49	59
	Sk	iP		13	49	04
		i		13	49	08
		i		13	49	22
		iLg1		13	54	54
	Gb	iP		13	48	07
	Rumania (h ~ 100 km).					
» 26	Ki	iP		20	23	43
	Pamir-Tadzhik.					
» 27	Up	iP		19	19	15C
		i		19	19	21
		iPP		19	20	55
		iSS		19	28	45
		iLg1		19	32	58
		i		19	33	19
		i		19	33	25
				μ	s	
		P	z′	0.6	0.8	
		M	E	11	8	
		M	N	25	16	

1959 June 27 (cont.)		M	Z	12	8	
	Ki	iP		19	19	07 C
		i		19	19	13
		ePP		19	20	50
		i		19	30	33
		iLgl		19	33	04
				μ	s	
		P	Z′	1.3	1.0	
		M	E	20	14	
		M	N	18	13	
		M	Z	23	14	
	Sk	iP		19	19	34 C
		i		19	19	39
	China-USSR. Magn. = 6.7 (Up, Ki). Very clear Lgl (Up, Ki).					
» 27	Up	iPKP		19	24	05
		i		19	24	13
		iPKP2		19	24	27
				μ	s	
		PKP	N	0.7	2	
		PKP	Z	3.0	2	
		PKP	Z′	1.8	0.7	
		M	E	1.9	24	
		M	N	1.5	21	
		M	Z	2.6	23	
	Ki	iPKP		19	23	51
		iPP		19	27	07
				μ	s	
		PKP	N	0.6	9	
		PKP	Z	2.9	9	
		PKP	Z′	1.1	1.3	
		PP	N	0.7	7	
		M	E	1.6	20	
		M	N	1.4	20	
		M	Z	2.1	20	
	Sk	iPKP		19	24	03
	Kermadec Islands (h ~ 100 km).					
» 28	Up	iP		00	15	30 C
	Ki	iP		00	15	06
» 28	Up	iP		02	33	50
	Ki	iP		02	33	16
	Bonin Islands.					
» 28	Up	iP		04	27	41
		iS		04	31	01
				μ	s	
		S	N	0.3	6	
		M	E	0.2	12	
		M	N	0.7	15	
		△ = 2000 km = 18°.				
	Ki	iP		04	27	26
		eS		04	30	43
				μ	s	
		S	N	0.3	6	
		M	E	0.7	14	
		M	N	0.5	15	
		M	Z	0.9	17	
		△ = 1900 km = 17°.				

1959 June 28 (cont.)	Sk	iP		04	26	59
	Near south coast of Iceland.					
» 28	Up	iP		06	07	08
		iS		06	11	10
		△ = 2450 km = 22°.				
	Ki	iP		06	08	23
	Sk	iP		06	07	50
	Greece.					
» 28	Up	iP		09	18	16
» 28	Up	iP		18	57	52
» 28	Ki	eL		19	07	
				μ	s	
		M	E	0.3	18	
		M	N	0.2	17	
		M	Z	0.4	18	
	Gulf of California.					
» 28	Up	iP		19	57	35
		iPP		20	01	53
		iSKS		20	08	07
		eS		20	09	18
		iPS		20	11	00
		iPPS		20	11	59
				μ	s	
		P	Z′	0.1	0.7	
		PP	E	0.2	8	
		PP	Z	0.5	8	
		PP	Z′	0.1	1.3	
		SKS	E	0.3	4	
		S	N	1.3	12	
		M	E	3.1	24	
		M	N	2.7	22	
		M	Z	4.0	24	
		△ = 11700 km = 105½°.				
	Ki	iP		19	57	24
		i		20	00	38
		ePP		20	01	30
		iSKS		20	07	56
		eS		20	08	57
		ePPS		20	11	25
				μ	s	
		P	Z′	0.1	1.5	
		SKS	E	1.3	8	
		S	N	0.8	10	
		M	E	2.0	21	
		M	N	1.3	19	
		M	Z	2.6	21	
		△ = 11450 km = 103°.				
	Sk	eP		19	57	43
		i		20	01	13
	Gb	iP		19	57	49
		iPP		20	02	23
	Sawoe Sea. Magn. = 6.4 (Up, Ki).					
» 29	Up			—		
				μ	s	
		M	E	0.9	19	

1959 June 29 (cont.)		M	N	0.8	16	
		M	Z	1.2	19	
	Ki	e		07	42	06
		e(SKKS)		07	42	31
		ePS		07	44	54
				μ	s	
		M	E	1.5	20	
		M	N	0.9	20	
		M	Z	1.4	20	
	Solomon Islands.					
» 29	Up	iP		09	32	28
	Ki	iP		09	31	34
	Aleutian Islands.					
» 29	Up	iP		13	32	54
	Ki	iP		13	32	36
				μ	s	
		P	Z′	0.1	1.0	
	Sk	iP		13	32	58
	Mindanao (h ~ 150 km).					
» 29	Up	iP		15	10	17
» 30	Up	i(P)		03	27	35
» 30	Up	iP		07	30	00
		i		07	30	13
				μ	s	
		P	Z′	0.1	0.6	
	Ki	iP		07	31	24
	Sk	iP		07	30	57 C
	Gb	iP		07	30	00
	Rumania (h ~ 150 km).					
» 30	Up	iPKP		10	43	18
		i		10	43	28
				μ	s	
		PKP	Z′	0.1	0.7	
	Ki	iPKP		10	42	54 D
		i		10	43	07
				μ	s	
		PKP	Z′	0.2	1.4	
	Sk	iPKP		10	43	08
	Gb	e(PKP)		10	43	29
	Kermadec Islands.					
» 30	Up	iP		13	11	11 D
» 30	Up	iP		13	34	29 D
		i		13	34	39
	Ki	iP		13	33	58
	Sk	iP		13	34	28
	Ryukyu Islands.					
» 30	Ki	iP		22	54	25
	Sk	eP		22	54	09
	Venezuela.					
July 1	Up	iP		02	39	02 D
		i		02	39	46

1959 July 1 (cont.)		i(pP)		02	41	06
		iS		02	48	21
		isS		02	51	42
				μ	s	
		P	Z′	0.4	0.5	
		S	E	2.1	4	
		S	N	3.5	5	
		S	Z	0.8	4	
		M	E	1.0	21	
		M	N	1.1	18	
		M	Z	1.1	17	
		△ = 9000 km = 81°.				
	Ki	iP		02	38	31
		ipP		02	40	23
		iS		02	47	22
		esS		02	50	34
		i(sS)		02	50	41
				μ	s	
		P	Z′	0.5	1.0	
		S	E	1.9	7	
		S	N	3.3	7	
		S	Z	1.1	7	
		M	E	1.1	17	
		M	N	0.6	19	
		M	Z	1.2	17	
		△ = 8350 km = 75°.				
	Sk	iP		02	39	00
		iS		02	48	17
	Gb	iP		02	39	21
		ipP		02	41	11
	Bonin Islands. h = 540 km (Up, Ki). Magn. = 6.5 (Up, Ki).					
» 1	Sk	iP		04	02	14
	Greece.					
» 1	Sk	iP		05	41	01
» 1	Up	iP		07	30	56
» 1	Up	iP		08	22	37
» 1	Ki	eP		11	22	59
	Sk	iP		11	22	28
	(Greece).					
» 2	Up	iP		05	14	55
	Ki	iP		05	14	02
	Sk	iP		05	14	35
	Aleutian Islands.					
» 2	Ki	eP		07	18	04
» 2	Up	iSg		08	24	44
		△ = 700 km = 6.3°.				
	Ki	eSg		08	25	59
		△ = 960 km = 8.6°.				
	Sk	ePg		08	22	31
		iSg		08	23	21
		i		08	23	24
		△ = 420 km = 3.8°.				

1959 July 2 (cont.)	Gb	eSg		08	24	12
		△=600 km=5.4°.				
		West coast of Norway, 62°N, 5½°E.				
		Origin time=08 21 15.				
» 2	Up	iSKP		11	48	43
	Ki	iPKP		11	45	50
		iSKP		11	48	19
		Fiji Islands (h ~ 650 km).				
» 2	Up	iSKP		11	55	18
	Ki	iPKP		11	52	24
		iSKP		11	54	54
	Sk	iPKP		11	52	33
	Gb	iPKP		11	52	41 D
		Fiji Islands (h ~ 650 km).				
» 3	Up	iP		05	31	32 D
				μ	s	
		P	z′	0.1	1.0	
	Ki	iP		05	30	37
		i		05	30	48
				μ	s	
		P	z′	0.1	1.0	
	Sk	iP		05	31	04 D
		Kodiak Island. Magn.=5.7 (Up, Ki).				
» 3	Up	i(P)		08	14	07
» 3	Up	ePKP		18	14	24
		iPKS		18	17	54
				μ	s	
		PKP	z	0.3	4	
		PKS	E	0.7	5	
		PKS	N	1.6	5	
	Ki	iPKP		18	14	13
				μ	s	
		PKP	z′	0.2	1.5	
	Sk	iPKP		18	14	23
	Gb	iPKP		18	14	32
		New Hebrides Islands.				
» 3	Up	iPKP		18	15	09
		iPKS		18	18	36
				μ	s	
		PKP	z′	0.6	2	
		M	E	9.4	23	
		M	N	10	23	
		M	z	9.5	23	
	Ki	iPKP		18	14	55
		ePP		18	16	43
				μ	s	
		PKP	z′	0.3	1.5	
		M	E	16	22	
		M	N	12	23	
		M	z	28	22	
	Sk	iPKP		18	15	06
	Gb	iPKP		18	15	14
		New Hebrides Islands. Magn.=6.8 (Up, Ki).				

1959 July 4	Up	iP		04	38	43
» 4	Up	iPKP		05	13	37
				μ	s	
		PKP	z′	0.1	0.7	
	Ki	ePKP		05	13	22
	Sk	ePKP		05	13	31
	Gb	iPKP		05	13	52 D
		ipPKP		05	14	27
		Tonga Islands. h=140 km (Gb).				
» 4	Up	iP		07	41	25 C
» 4	Up	iP		07	44	05
		i		07	44	14
		iPcP		07	49	26
				μ	s	
		M	E	0.9	19	
		M	N	0.8	16	
		M	z	1.3	17	
		△=1550 km=14°.				
	Ki	iP		07	42	50
		i		07	43	01
		iS		07	44	22
		e(T)		07	49	25
		i		07	50	02
				μ	s	
		S	N	0.5	9	
		M	E	2.7	17	
		M	N	1.2	14	
		M	z	3.2	16	
		△=890 km=8.0°.				
	Sk	iP		07	43	06 D
		eS		07	44	52
		△=1020 km=9.2°.				
		North Atlantic between Jan Mayen and Spitsbergen, 72¼°N, 1¾°E.				
		Origin time=07 40 51.				
» 4	Ki	iP		09	00	57
		i		09	01	07
		i(L)		09	01	10
		Local. Probably explosion.				
» 5	Up	iP		05	43	39
	Ki	eP		05	42	47
		Kamchatka.				
» 6	Up	iP		09	23	39
		iPP		09	28	12
		ipPP		09	30	12
		iSKS		09	33	15
		i!		09	34	10
		iSP		09	36	33
		epS		09	37	49
		i		09	38	53
		iPKKP		09	39	06
				μ	s	
		PP	z′	0.3	1.5	
		SKS	E	2.6	10	

1959 July 6 (cont.)		SKS	N	0.9	8	
		PKKP	z′	0.1	0.7	
		M	E	1.9	20	
		M	N	1.9	19	
		M	z	1.8	19	
		△ ~ 12000 km ~ 108°.				
	Ki	iPKP		09	27	49 D
		iPP		09	28	43
		epPP		09	30	42
		iSKS		09	33	34
		i		09	34	37
		iS		09	35	19
		iSP		09	37	13
		iPS		09	38	27
		i		09	38	42
		iPKKP		09	38	52
				μ	s	
		PKP	z′	0.4	2.0	
		SKS	E	2.1	10	
		SKS	N	0.6	6	
		S	N	1.7	9	
		PKKP	z′	0.4	1.4	
		M	E	4.2	18	
		M	N	1.2	19	
		M	z	1.6	18	
		△ ~ 12350 km ~ 111°.				
	Sk	eP		09	23	40
		ipP		09	25	54
		iPP		09	28	01
		iPKKP		09	39	00
		△ ~ 11900 km ~ 107°.				
	Gb	iP		09	23	23
		ipP		09	25	40
		iPKP		09	27	37
		i		09	31	32
		△ ~ 11650 km ~ 105°.				
		Chaco Province, Argentina. h=630 km (Ki, Sk, Gb). Magn.=6.6 (Up, Ki).				
» 6	Up	iPP		09	41	24
		ipPP		09	43	21
		iSKS		09	46	27
		i!		09	47	21
		iS		09	47	59
		iSP		09	49	43
				μ	s	
		PP	z′	0.5	1.5	
		SKS	E	4.9	9	
		SKS	N	1.7	8	
		S	E	0.5	3	
		S	N	1.0	5	
		△ ~ 12000 km ~ 108°.				
	Ki	iPKP		09	40	59
		iPP		09	41	53
		ipPP		09	43	51
		iSKS		09	46	45
		i!		09	47	49
		iSP		09	50	22
		iPS		09	51	38
		i		09	51	53

1959 July 6 (cont.)		iPKKP		09	52	04
				μ	s	
		PP	z	0.8	5	
		PP	z′	0.7	2.0	
		SKS	E	4.3	6	
		SKS	N	1.5	6	
		△ ~ 12350 km ~ 111°.				
	Sk	iPP		09	41	19
		ipPP		09	43	16
		iPKKP		09	52	08
		△ ~ 11900 km ~ 107°.				
	Gb	ipP		09	38	47
		i		09	39	28
		△ ~ 11650 km ~ 105°.				
		Chaco Province, Argentina. h=610 km (Up, Ki, Sk). Magn.=6.6 (Up, Ki).				
» 6	Sk	eP		13	37	17
		i		13	37	23
» 7	Up	iP		07	56	53
» 7	Ki	eL		08	01	
				μ	s	
		M	E	0.3	19	
		M	N	0.3	19	
		M	z	0.4	18	
		Kurile Islands.				
» 7	Up	iPg		08	44	09
		iSg		08	44	32
				μ	s	
		Pg	z′	0.1	0.5	
		Sg	z′	0.1	0.5	
		△=200 km=1.8°.				
» 7	Ki	iP		14	51	30
		Honshu, Japan.				
» 8	Sk	iP		00	44	51
» 8	Up	iP		02	08	16
	Ki	eP		02	07	25
				μ	s	
		P	E	0.2	10	
		P	N	0.2	10	
		P	z′	0.1	1.3	
		M	E	0.5	16	
		M	N	0.5	14	
	Sk	iP		02	07	21
	Gb	iP		02	08	11
		Near east coast of Greenland.				
» 8	Up	iP		04	11	32 D
				μ	s	
		P	z′	0.1	0.7	
	Ki	iP		04	10	46
				μ	s	
		P	z′	0.1	1.0	
	Sk	iP		04	11	22

1959 July 8 (cont.)	Gb	iP		04	11	52
	Kurile Islands (h ~ 100 km).					
» 8	Ki	iP		08	33	52
	Hokkaido, Japan (h ~ 120 km).					
» 9	Up	i(P)		15	35	24
				μ	s	
		(P)	z′	0.1	0.8	
» 9	Up	i(P)		16	19	33
		e(sP)		16	19	53
		iPKP		16	23	22
		iPP		16	23	42
		ipPP		16	24	14
		isPP		16	24	25
		iSKS		16	29	49
		i(sSKS)		16	30	35
		eSP		16	32	36
		iPKKP		16	35	17
				μ	s	
		PP	E	0.7	6	
		PP	Z	0.9	6	
		PP	Z′	0.3	1.7	
		SKS	E	2.0	10	
		SKS	N	0.5	8	
		M	E	2.4	18	
		M	N	1.2	20	
		M	Z	2.4	19	
		△ ~ 11650 km ~ 105°.				
	Ki	e(sP)		16	20	11
		iPP		16	24	03
		ipPP		16	24	34
		eSKS		16	30	02
		i!		16	30	58
		eSP		16	33	16
		ePKKP		16	34	50
		iPKKP		16	35	05
		i!		16	35	34
				μ	s	
		PP	Z	0.3	6	
		PP	Z′	0.1	1.5	
		SKS	E	2.5	12	
		PKKP	Z′	0.1	1.0	
		M	E	1.8	18	
		M	N	1.1	20	
		M	Z	2.4	20	
		△ ~ 12000 km ~ 108°.				
	Sk	i(P)		16	19	28
		ipP		16	19	47
		i		16	24	17
		iPKKP		16	35	03
		△ ~ 11550 km ~ 104°.				
	Gb	i(sP)		16	19	37
		iPP		16	23	15
		i		16	24	11
		△ ~ 11350 km ~ 102°.				
	Chile-Bolivia (h ~ 100 km). Magn. = 6.5 (Up, Ki).					
» 9	Up	iP		20	08	43 D
	Ki	iP		20	08	51

1959 July 9 (cont.)	Sk	iP		20	09	08
	Hindu Kush.					
» 10	Up	iPKP		02	33	06 C
				μ	s	
		PKP	Z′	0.1	0.7	
	Sk	iPKP		02	32	58
	Gb	iPKP		02	33	12
	Kermadec Islands.					
» 10	Ki	eL		05	01	
				μ	s	
		M	E	0.4	22	
		M	N	0.2	15	
		M	Z	0.3	16	
	Chile-Bolivia.					
» 10	Up	iP		12	26	30
	Ki	iP		12	26	04
	Formosa. Origin time = 12 14 39.					
» 10	Up	iP		16	47	35
» 10	Up	eP		17	48	18
		iLgl		18	01	43
				μ	s	
		M	E	0.2	13	
	Ki	iP		17	48	16
		eLgl		18	01	05
				μ	s	
		M	E	0.6	14	
		M	N	0.5	12	
		M	Z	0.6	14	
	Sk	iP		17	48	38
	Kirghiz, USSR.					
» 10	Up	iP		20	33	05
		iPP		20	33	33
	Ki	iP		20	34	01
				μ	s	
		M	E	0.2	15	
		M	N	0.2	15	
	Sk	eP		20	33	41
	Cyprus.					
» 10	Ki	iP		21	02	25
	Sk	eP		21	02	42
	Kodiak Island.					
» 11	Up			—		
				μ	s	
		M	E	0.6	20	
		M	N	0.8	20	
		M	Z	1.0	20	
	Ki	iPKP		05	10	36
				μ	s	
		M	E	0.7	22	
		M	N	0.6	21	
		M	Z	1.2	22	
	Sk	ePKP		05	10	47
	New Hebrides Islands.					

1959 July 11	Up	e		12	20	54
		eS		12	28	15
				μ	s	
		M	E	5.1	22	
		M	N	4.3	23	
		M	Z	4.8	21	
	Ki	ePP		12	21	01
		iPPS		12	31	48
		i!		12	32	39
				μ	s	
		PP	Z	0.3	7	
		M	E	2.6	19	
		M	N	2.5	17	
		M	Z	3.9	18	
	Indian Ocean. Magn. = 6.3 (Up, Ki).					
» 11	Up	iP		18	34	05 C
		i		18	34	11
				μ	s	
		P	Z′	0.2	0.9	
		M	E	0.4	21	
		M	N	0.6	21	
		M	Z	0.6	19	
	Ki	iP		18	33	18
				μ	s	
		M	E	0.5	19	
		M	N	0.4	17	
		M	Z	0.9	17	
	Sk	iP		18	33	54 C
	Kurile Islands.					
» 11	Up	iP		19	01	30
» 12	Up	iPKP		00	42	58
				μ	s	
		PKP	Z′	0.1	1.0	
	Ki	iPKP		00	42	51
		iSKP		00	45	40
				μ	s	
		SKP	Z′	0.3	1.8	
	Sk	ePKP		00	42	52
		iSKP		00	45	57
	Fiji Islands (h ~ 400 km).					
» 12	Up	i(P)		04	00	51
		i		04	01	04
» 12	Up	iP		16	57	43 D
				μ	s	
		P	Z′	0.1	0.7	
	Ki	iP		16	58	51 C
				μ	s	
		P	Z′	0.1	0.6	
	Sk	iP		16	58	21 C
	Aegean Sea.					
» 12	Up	iP		19	29	17
		eLgl		19	42	19

1959 July 12 (cont.)				μ	s	
		M	E	0.8	10	
		M	Z	0.8	10	
	Ki	iP		19	29	18
		eLgl		19	42	05
				μ	s	
		M	E	1.0	14	
		M	N	0.7	12	
		M	Z	0.8	13	
	Sk	iP		19	29	40 C
	Kirghiz, USSR.					
» 13	Up	iP		01	42	49
		e		01	46	05
		i		01	46	18
	Ki	eP		01	41	40
				μ	s	
		M	E	0.3	11	
		M	N	0.3	12	
		M	Z	0.3	13	
	Sk	iP		01	41	49
		iS		01	43	43
		△ = 1100 km = 10°.				
	Jan Mayen.					
» 13	Up	iP		02	43	18
				μ	s	
		P	Z′	0.1	1.0	
	Ki	iP		02	43	43
» 13	Up	iP		12	39	48
		iS		12	48	47
		iP′P′		13	07	59
				μ	s	
		P	Z′	0.5	1.0	
		P′P′	Z′	0.1	1.2	
		M	E	3.5	17	
		M	N	3.1	17	
		M	Z	3.2	18	
		△ = 7600 km = 68½°.				
	Ki	iP		12	38	55
		iPcP		12	39	41
		iS		12	47	05
		iP′P′		13	08	21
				μ	s	
		P	N	0.4	5	
		P	Z	0.3	5	
		P	Z′	0.7	1.4	
		S	E	1.7	12	
		S	N	0.6	14	
		M	E	3.3	19	
		M	N	1.9	17	
		M	Z	2.8	17	
		△ = 6700 km = 60½°.				
	Sk	iP		12	39	26 D
		iPcP		12	39	58
		iP′P′		13	08	09
	Aleutian Islands. Slightly deeper than normal. Magn. = 6.2 (Up, Ki).					

1959 July 13	Up	iPKP		15	43	24C
	Ki	iSKP		15	46	02
Kermadec Islands (h ~ 500 km).						
» 14	Up	eP		00	11	13
	Ki	iP		00	10	21
Aleutian Islands.						
» 14	Up	iPKP		06	20	02
Kermadec Islands. Deep?						
» 14	Up	iP		08	52	00
	Ki	eP		08	50	58
				μ	s	
		M	N	0.2	17	
		M	Z	0.4	18	
Aleutian Islands.						
» 14	Up	iP		11	44	19C
				μ	s	
		P	Z′	0.1	0.8	
	Ki	iP		11	43	24C
				μ	s	
		P	Z′	0.4	1.0	
	Sk	iP		11	43	53C
		iPcP		11	44	39
Alaska (h ~ 60 km).						
» 14	Ki	iPKP		13	19	20
New Hebrides Islands (h ~ 100 km).						
» 14	Up	iP		20	29	46
				μ	s	
		P	Z′	0.1	0.6	
	Sk	iP		20	30	29
Greece.						
» 14	Ki	eL		23	29	
				μ	s	
		M	E	0.6	18	
		M	Z	0.6	19	
Celebes.						
» 15	Up	iP		16	49	53
Hindu Kush.						
» 15	Up	i(P)		18	17	55
» 15	Ki	iP		23	31	29
Italy.						
» 16	Up	iP		07	11	00
	Sk	iP		07	10	24
		i		07	10	36
Alaska.						
» 16	Sk	iP		10	49	16
» 16	Up	iP		15	28	36D
		i		15	28	50

1959 July 16 (cont.)		iP′P′		15	56	39
				μ	s	
		P	Z′	0.3	1.0	
	Ki	e(S)		15	36	04
				μ	s	
		(S)	N	0.2	8	
		M	E	0.4	18	
		M	N	0.2	17	
		M	Z	0.4	17	
	Sk	iP		15	28	14
Aleutian Islands.						
» 16	Up	iP		16	37	19
Mexico.						
» 16	Sk	iPKP		19	33	13
Loyalty Islands.						
» 17	Up	iP		19	42	48
	Ki	iP		19	43	53
Turkey.						
» 17	Up	i(P)		21	08	29
				μ	s	
		(P)	Z′	0.1	0.6	
Seismic?						
» 17	Up	iP		23	04	40
	Ki	iP		23	04	44C
	Sk	iP		23	04	27C
Colombia-Venezuela.						
» 17	Up	iP		23	31	22
		ipP		23	31	53
	Ki	iP		23	30	26
		ipP		23	30	55
	Sk	iP		23	30	54
Alaska. h = 130 km (Up, Ki).						
» 18	Up	iP		03	59	09
		i		03	59	14
	Ki	iP		03	59	48
	Sk	eP		03	59	48
Persian Gulf.						
» 18	Up	iPKP		07	18	55
	Ki	iPKP		07	18	48
		iSKP		07	21	21
	Sk	iSKP		07	21	36
Fiji Islands (h ~ 600 km).						
» 18	Up	iP		20	07	09D
		ipP		20	07	59
		iPP		20	10	14
		iS		20	17	12
		iPKPPKS		20	36	47
				μ	s	
		P	E	2.4	5	
		P	N	1.2	4	
		P	Z	8.2	5	
		P	Z′	1.7	0.8	

1959 July 18 (cont.)		PP	Z′	0.4	1.3	
		S	E	9.8	9	
		S	N	51	13	
		PKPPKS	Z′	0.1	1.5	
		M	E	10	18	
		M	N	28	20	
		M	Z	11	18	
		△ = 9100 km = 82°.				
	Ki	iP		20	06	52D
		iPP		20	09	56
		iS		20	16	37
		iPKKP		20	25	42
		eP′P′		20	33	37
		iPKPPKS		20	37	00
				μ	s	
		P	E	4.9	7	
		P	N	0.7	8	
		P	Z	11	8	
		P	Z′	2.6	1.0	
		PP	E	2.1	8	
		PP	Z	2.8	8	
		S	E	4.1	11	
		S	N	30	15	
		S	Z	5.9	14	
		S	Z′	0.8	2.0	
		M	E	19	19	
		M	N	19	22	
		M	Z	11	17	
		△ = 8800 km = 79°.				
	Sk	iP		20	07	15D
		iS		20	17	26
		iPKKP		20	25	30
		eP′P′		20	33	35
		iPKPPKS		20	36	45
		△ = 9350 km = 84°.				
Luzon. h = 200 km (Up). Magn. = 7.1 (Up, Ki). Records of this earthquake will certainly prove useful both for the study of core phases and for the application of methods for fault plane determinations, including the use of S phases.						
» 19	Up	iP		03	55	26
		i		03	55	29
		iPP		03	59	11
				μ	s	
		P	Z′	0.1	0.6	
		M	E	1.1	22	
		M	N	1.2	20	
		M	Z	1.0	21	
	Ki	iP		03	55	24C
		eSKS		04	05	53
				μ	s	
		P	Z	0.4	7	
		P	Z′	0.2	1.0	
		M	E	1.7	23	
		M	N	1.1	22	
		M	Z	1.8	21	

1959 July 19 (cont.)	Sk	iP		03	55	39C
Sunda Strait. Magn. = 5.9 (Up, Ki).						
» 19	Up	iPKP		14	03	20
	Ki	iSKP		14	05	52
Fiji Islands (h ~ 550 km).						
» 19	Up	eP		15	19	46
		ipP		15	20	43
		iPP		15	23	57
		ipPP		15	24	45
		iSKS		15	30	03
		isS		15	32	38
		iPS		15	33	10
		iPKKP		15	35	48
		i		15	36	11
				μ	s	
		PP	E	1.8	6	
		PP	Z	3.3	7	
		PP	Z′	1.4	2.5	
		SKS	E	18	10	
		SKS	N	3.2	9	
		SKS	Z	3.1	9	
		M	E	8.5	21	
		M	N	6.4	21	
		M	Z	12	21	
		△ ~ 11450 km ~ 103°.				
	Ki	iP		15	19	56
		ipP		15	20	46
		i		15	23	28
		iPP		15	24	14
		iSKS		15	30	12
		iS		15	31	25
		iPS		15	33	34
		iPKKP		15	35	41
		i		15	36	01
		iP′P′		15	44	00
				μ	s	
		P	Z	0.5	8	
		PP	E	2.2	9	
		PP	Z	3.7	9	
		PP	Z′	1.0	2.5	
		SKS	E	19	10	
		SKS	N	1.4	8	
		S	E	3.6	9	
		P′P′	Z′	0.2	2.0	
		M	E	8.1	20	
		M	N	6.6	23	
		M	Z	19	22	
		△ = 11500 km = 103½°.				
	Sk	iP		15	19	38
		iPKKP		15	35	55
		eP′P′		15	44	04
Peru. h = 210 km (Ki). Magn. = 7.0 (Up, Ki).						
» 19	Ki	iP		17	07	24
	Sk	iP		17	07	35
» 19	Ki	iP		19	08	34

1959
July 19
(cont.)

		P	z′	μ 0.2	s 0.6	
» 20	Up	iP		02	53	44 D
		ipP		02	55	38
		iPP		02	57	40
		iSKS		03	03	29
		i(SKKS)		03	03	57
		iS		03	04	17
		eSP		03	05	40
		i(PKKP)		03	10	58
				μ	s	
		P	z′	0.1	0.9	
		pP	z′	0.3	2.0	
		SKS	E	1.3	6	
		SKS	N	0.4	4	
		S	E	1.1	4	
		S	N	1.0	4	
		M	E	0.7	18	
		M	N	1.0	19	
		M	Z	0.8	25	
		△=10650 km=96°.				
	Ki	iP		02	53	38 D
		ipP		02	55	32
		epPP		02	59	16
		iSKS		03	03	23
		iSKKS		03	03	46
		eSP		03	05	31
		i(PKKP)		03	11	02
				μ	s	
		P	z′	0.1	1.0	
		pP	z′	0.2	2.0	
		SKS	E	2.7	10	
		SKS	N	0.6	5	
		M	E	1.0	18	
		M	N	0.8	18	
		M	Z	1.4	20	
		△~10550 km~95°.				
	Sk	iP		02	53	55 D
		ipP		02	55	49
		iPP		02	58	02
		ipPP		02	59	46
		iSKS		03	03	43
		i(PKKP)		03	10	18
		△=10800 km=97°.				
	Java Sea. h=510 km (Up, Ki, Sk). Origin time=02 41 10. Magn.=6.0 (Up, Ki).					
» 20	Up	iPKP		17	12	02
	Ki	ePKP		17	11	52
		iSKP		17	14	30
	Sk	iPKP		17	11	58
	Fiji Islands (h~600 km).					
» 21	Up	ePKP		08	02	21
		iPP		08	04	26
		iPKS		08	05	44
				μ	s	
		PP	z′	0.1	2.0	
		PKS	E	0.2	5	

1959
July 21
(cont.)

		PKS	N	0.3	4	
		M	E	0.4	20	
		M	N	0.5	23	
		M	Z	0.8	23	
	Ki	ePKP		08	02	10
		ePP		08	03	52
				μ	s	
		PP	Z	0.3	5	
		M	E	0.7	20	
		M	N	0.3	18	
		M	Z	1.2	20	
	Sk	iPKP		08	02	20 D
	New Hebrides Islands. Magn.=6.1 (Up, Ki).					
» 21	Up	iP		09	29	26
		i(S)		09	38	30
				μ	s	
		M	E	1.3	22	
		M	N	0.5	23	
		M	Z	1.8	22	
	Ki	eP		09	29	15
		i		09	29	29
		iS		09	38	36
				μ	s	
		S	E	0.4	8	
		S	N	0.3	7	
		M	E	0.8	21	
		M	N	0.3	20	
		M	Z	1.3	21	
		△=8000 km=72°.				
	Sk	eP		09	28	57
		i		09	29	17
	Dominican Republic.					
» 21	Up	iPKP		10	28	04
	Tonga Islands.					
» 21	Up	iP		12	42	02
		ePP		12	45	26
		eSKS		12	52	27
		e(S)		12	52	34
				μ	s	
		PP	E	0.4	9	
		PP	Z	0.7	8	
		SKS	E	0.4	7	
		(S)	N	0.3	7	
		M	E	0.9	19	
		M	N	0.5	16	
		M	Z	0.9	18	
		△=9800 km=88°.				
	Ki	iP		12	41	52
		ePP		12	45	02
		eSKS		12	52	12
		iS		12	52	26
				μ	s	
		P	E	0.3	6	
		P	Z	0.6	9	
		PP	N	0.3	9	
		PP	Z	0.6	9	
		SKS	E	0.8	9	

1959
July 21
(cont.)

		SKS	N	0.8	9	
		S	Z	0.5	9	
		M	E	2.2	22	
		M	N	0.7	20	
		M	Z	2.6	21	
		△=9550 km=86°.				
	Sk	iP		12	41	44
	Oaxaca, Mexico. Magn.=6.3 (Up, Ki).					
» 21	Up	iP		13	16	24
	Ki	iP		13	16	10
	Sk	iP		13	16	05
	Oaxaca, Mexico.					
» 21	Up	iP		17	51	17
	Ki	iP		17	50	39
		i		17	50	44
	Sk	eP		17	50	50
	Utah-Arizona, USA.					
» 22	Up	iP		03	04	51
	Rumania (h~150 km).					
» 22	Ki	eS		05	14	53
				μ	s	
		S	E	0.5	9	
		M	E	0.4	22	
	Oaxaca, Mexico.					
» 22	Up	iPg		07	44	54
		iS*		07	45	17
		iSg		07	45	18
				μ	s	
		Sg	z′	0.2	0.5	
		△=200 km=1.8°.				
	Sk	iSg		07	46	48
		△=510 km=4.6°.				
	The Baltic, 61.1°N, 20.3°E. Origin time=07 44 18. Underwater explosion?					
» 22	Up	iP		11	29	06 C
		eSKS		11	39	38
				μ	s	
		P	z′	0.1	0.7	
		M	E	0.5	26	
		M	N	0.9	27	
		M	Z	0.9	26	
	Ki	iP		11	28	50
		eSKS		11	39	16
		eS		11	39	47
				μ	s	
		P	z′	0.2	1.0	
		SKS	E	0.3	8	
		S	E	0.3	7	
		M	E	0.4	22	
		M	N	0.4	23	
		△=10400 km=93½°.				
	Sk	iP		11	29	11
	Molucca Passage. Magn.=5.9 (Up, Ki).					

1959
July 22

	Ki	iS		16	17	13
				μ	s	
		S	E	0.4	9	
		M	E	0.4	21	
	Oaxaca, Mexico.					
» 22	Up	iPKP		16	56	25
	Ki	ePKP		16	56	04
	Sk	iPKP		16	56	19 C
	Kermadec Islands.					
» 22	Up	i(P)		18	51	22
	Local blast?					
» 22	Up	iP		19	33	38 D
		iPcP		19	34	10
		ipP		19	35	41
		isP		19	36	44
		iS		19	41	12
		e		20	02	10
		iP′P′		20	02	28
				μ	s	
		P	Z	0.4	2	
		P	N	0.8	2	
		P	Z	2.3	2	
		P	Z′	0.7	0.6	
		S	E	0.8	4	
		S	N	1.5	5	
		M	E	1.8	16	
		M	N	1.1	16	
		M	Z	1.1	18	
		△=7000 km=63°.				
	Ki	iP		19	32	47 D
		i(ScP)		19	36	35
		iS		19	39	36
		eP′P′		20	02	32
				μ	s	
		P	E	0.4	6	
		P	N	0.6	6	
		P	Z′	1.6	0.8	
		S	E	1.0	7	
		S	N	2.2	7	
		M	E	2.7	17	
		M	N	0.8	16	
	Sk	iP		19	33	24 D
		i(pP)		19	35	42
		iS		19	40	48
	Sea of Okhotsk. h=650 km (Up). Magn.=6.1 (Up, Ki).					
» 22	Up	iP		19	42	49
				μ	s	
		P	Z′	0.1	1.0	
	Ki	iP		19	42	00
				μ	s	
		P	Z′	0.2	1.5	
	Sk	iP		19	42	39
	(Kamchatka). Magn.=5.8 (Up, Ki).					
» 22	Up	eP		22	01	12
	Ki				—	

1959 July 22 (cont.)		M	N	μ 0.2	s 16	
	Formosa.					
» 22	Up	eP		22	36	23
	Ki	iP		22	36	04
» 22	Up	iPKP		23	21	08
		iPP		23	22	06
		iSKS		23	27	53
				μ	s	
		PP	E	0.4	6	
		PP	N	0.5	6	
		PP	Z	0.9	6	
		SKS	E	0.3	4	
		SKS	N	0.4	4	
		M	E	7.3	20	
		M	N	6.5	20	
		M	Z	9.7	20	
		△ ~ 12800 km ~ 115°.				
	Ki	iP		23	16	54
		ePKP		23	20	58
		ePP		23	21	26
		iSKS		23	27	29
				μ	s	
		PP	E	0.3	7	
		PP	N	0.3	8	
		SKS	E	0.7	6	
		SKS	N	0.4	5	
		M	E	6.5	21	
		M	N	6.2	23	
		△ ~ 12100 km ~ 109°.				
	Sk	iPKP		23	21	08
	New Britain (h ~ 60 km). Magn. = 6.6 (Up, Ki).					
» 23	Up	e(P)		02	42	20
		e		02	43	05
» 23	Ki	iP		04	01	08
	Sk	iP		04	00	54
	Colombia (h ~ 60 km).					
» 23	Up	iP		08	26	31
		i		08	26	41
	Sk	iP		08	26	04
	Oregon, USA.					
» 23	Up	iP		13	56	42
	Ki	iP		13	56	02
	Sk	iP		13	56	35
	Honshu, Japan.					
» 23	Up	iPKP		15	16	13C
		i!		15	16	44
		iPKS		15	19	53
				μ	s	
		PKP	Z	0.4	4	
		PKP	Z′	0.3	0.8	
		PKS	N	0.2	4	
		M	E	0.4	22	

1959 July 23 (cont.)		M	N	1.1	22	
		M	Z	1.8	22	
	Ki	ePKP		15	15	57
		ePKS		15	19	30
				μ	s	
		PKS	N	0.3	9	
		M	E	0.9	25	
		M	N	0.9	25	
		M	Z	1.6	21	
	Sk	iPKP		15	16	05
	Tonga Islands (h ~ 60 km).					
» 23	Ki	iP		17	20	00
	Sk	iP		17	19	27
	Mid-Atlantic Ridge.					
» 23	Up	iP		21	37	35
		i(pP)		21	37	59
				μ	s	
		M	E	0.8	17	
		M	N	0.4	18	
		M	Z	0.8	17	
	Ki	iP		21	37	07
		i(pP)		21	37	33
				μ	s	
		M	E	0.5	19	
		M	N	0.3	19	
		M	Z	0.6	19	
	Sk	iP		21	37	36
	Ryukyu Islands. (pP) could instead be P of a new shock in the same locality.					
» 24	Up	iP		01	34	53
		eS		01	44	30
				μ	s	
		P	Z′	0.1	1.0	
		S	E	1.2	13	
		S	N	1.8	14	
		M	E	4.3	19	
		M	N	7.1	17	
		M	Z	6.5	20	
		△ = 8400 km = 75½°.				
	Ki	iP		01	34	13
		iPP		01	36	44
		eS		01	43	08
		i		01	43	23
				μ	s	
		P	N	0.3	6	
		P	Z	0.4	6	
		P	Z′	0.2	1.5	
		S	N	1.5	11	
		M	E	6.5	22	
		M	N	4.0	21	
		M	Z	7.8	22	
		△ = 7550 km = 68°.				
	Sk	iP		01	34	25
	Northern California. Magn. = 6.0 (Up, Ki).					

1959 July 24 (cont.)	Up	iP		02	55	46C
	Ki	iP		02	55	02
				μ	s	
		P	Z′	0.1	1.2	
	Sk	iP		02	55	37
	Hokkaido, Japan (h ~ 110 km).					
» 24	Up	iP		07	26	48
	Ki	iP		07	27	31
		iPP		07	29	11
	Sk	iP		07	27	24
	Iran.					
» 24	Ki	e(Sg)		08	45	00
	Sk	e(Sg)		08	44	49
» 24	Up	iP		16	28	00C
		ipP		16	28	36
		iS		16	36	17
		i		16	37	37
				μ	s	
		P	Z′	0.5	0.6	
		△ = 7100 km = 64°.				
	Ki	iP		16	27	53C
		ipP		16	28	30
		eS		16	36	06
		esS		16	37	11
				μ	s	
		P	Z′	0.5	0.9	
		S	E	0.4	8	
		△ = 7000 km = 63°.				
	Sk	iP		16	28	15C
		ipP		16	28	52
	India-Burma. h = 160 km (Up, Ki, Sk). Magn. = 6.1 (Up, Ki).					
» 24	Up	iP		16	47	31C
				μ	s	
		P	Z′	0.1	0.6	
» 24	Up	iP		18	49	49
	Seismic?					
» 24	Up	iPKP		23	21	58
		i		23	22	02
		iX		23	22	25
		iPKKP		23	32	00
	Ki	iPKP		23	22	13
		iX		23	22	40
		i(PP)		23	24	48
		i		23	25	23
				μ	s	
		PKP	Z′	0.1	1.0	
		M	E	0.2	23	
		M	N	0.2	18	
		M	Z	0.4	19	
	Sk	iPKP		23	22	03
		i		23	25	28
	Sandwich Islands. The phase X appearing 27 sec after PKP at Up and Ki is					

1959 July 24 (cont.)	either pPKP or PKP of a new shock in the same locality.					
» 25	Up	eP		11	01	13
	Ki	eP		11	02	07
	Turkey.					
» 25	Up	iP		16	09	08
	Ki	iP		16	08	20
	Sk	iP		16	08	58
	Sakhalin.					
» 25	Ki	iP		18	17	15
	Sk	iP		18	16	47
	Gb	iP		18	16	38
	Mid-Atlantic Ridge.					
» 25	Up	iP		19	34	14
				μ	s	
		M	E	0.3	18	
		M	N	0.3	15	
	Ki	iP		19	33	27
				μ	s	
		M	E	0.9	16	
		M	N	0.5	18	
		M	Z	0.6	18	
	Sk	iP		19	34	06
	Sakhalin.					
» 25	Up	iP		21	31	54D
		ipP		21	32	16
				μ	s	
		P	Z′	0.1	0.6	
	Ki	iP		21	31	15D
		isP		21	31	46
	Sk	iP		21	31	48
	Gb	iP		21	32	(16)D
		isP		21	32	(46)
	Honshu, Japan. h = 80 km (Up, Ki, Gb).					
» 26	Ki	eP		05	24	13
		i		05	24	35
» 26	Ki	iP		09	48	11
	Sk	iP		09	47	50
	Venezuela.					
» 26	Up	iP		17	11	38
		i		17	11	46
		eS		17	15	31
		iLg1		17	17	48
				μ	s	
		P	Z′	0.1	1.0	
		S	E	0.4	5	
		S	N	0.3	5	
		M	E	12	18	
		M	N	5.8	18	
		M	Z	2.8	16	
		△ = 2300 km = 20½°.				
	Ki	iP		17	12	49
	Sk	iP		17	12	23

1959 July 26 (cont.)		i(Lg1)	17	19	45
	Turkey. Magn.=5.1 (Up).				
» 26	Up	iP	19	48	11
	Ki	eP	19	47	16
	Sk	iP	19	47	53
	Kamchatka.				
» 27	Ki	iP	00	55	50
	Sk	iP	00	55	53
		iS	00	57	55
	Jan Mayen.				
» 27	Up	iPg	15	47	58
		iSg	15	48	50
				μ	s
		Sg z′		0.1	0.5
		△=440 km=4.0°.			
	Sk	eSn	15	49	17
		iSg	15	49	49
		i	15	50	02
		△=640 km=5.8°.			
	Gb	iPg	15	47	01
		i	15	47	10
		iSg	15	47	16
		△=130 km=1.2°.			
	Skagerack, 58.6°N, 10.4°E (Up, Gb). Origin time=15 46 37. The location is not so well satisfied by Sk. The epicenter is close to that of the big earthquake (magn.=6.5) of October 23, 1904.				
» 27	Up	iPg	16	07	26
		iSg	16	08	21
				μ	s
		Sg z′		0.2	0.6
		△=460 km=4.1°.			
	Ki	i	16	10	24
		e(Sn)	16	10	55
		iSg	16	12	02
		△=1200 km=10.8°.			
	Sk	ePg	16	08	01
		eS*	16	08	56
		iSg	16	09	13
		△=630 km=5.7°.			
	Gb	iPg	16	06	31
		iSg	16	06	47
		△=130 km=1.2°.			
	Skagerack, 58.6°N, 10.3°E (Up, Gb). Origin time=16 06 06. The same remarks as for the preceding shock are valid here, including Ki.				
» 27	Up	iP	16	12	14
» 28	Up	iP	00	37	06

1959 July 28	Up	iPn	09	32	17
		i(Pg)	09	32	28
		eSg	09	33	26
		i	09	33	33
		△=440 km=4.0°.			
	Sk	e(S*)	09	34	13
		△=650 km=5.9°.			
	Gb	iPg	09	31	21
		iSg	09	31	25
		△=40 km=0.4°.			
	Kattegatt, 57.8°N, 11.2°E. Origin time =09 31 13.				
» 28	Up	iPn	09	42	58
		iP*	09	43	07
		iSg	09	44	08
		△=440 km=4.0°.			
	Sk	e(S*)	09	44	54
		△=650 km=5.9°.			
	Gb	iPg	09	42	02
		iSg	09	42	08
		△=40 km=0.4°.			
	Kattegatt, 57.8°N, 11.2°E. Origin time=09 41 55.				
» 28	Ki	iP	11	13	08
» 28	Ki	iP	17	28	10
» 29	Up	iP	11	33	39
» 30	Up	iPg	10	11	24
		i	10	11	27
		i	10	11	35
		iSg	10	11	39
				μ	s
		Sg z′		0.2	0.6
		△=130 km=1.2°.			
	Ki	eSg	10	16	09
	Probably central Baltic. Origin time= =10 11 00. Explosion?				
» 30	Up	iPKP	13	13	50 D
	Ki	ePKP	13	13	36
	Sk	iPKP	13	13	44
	Gb	iPKP	13	13	55
		iPKP2	13	14	12
	Kermadec Islands.				
» 30	Up	i(Sg)	13	39	20
				μ	s
		(Sg) z′		0.2	0.9
» 30	Up	iP	15	38	26
				μ	s
		P z′		0.1	0.6
	Gb	iP	15	38	55
» 30	Up	iP	16	53	24 C
	Ki	iP	16	53	33
	Sk	iP	16	53	49
	Hindu Kush (h ~ 200 km).				

1959 July 30	Up	iP	17	13	29 C
	Honshu, Japan (h ~ 60 km).				
» 30	Up	eSn	18	35	42
		iSg	18	36	18
		△=670 km=6.0°.			
	Ki	eSn	18	36	13
		eLg1	18	36	45
		△=800 km=7.2°.			
	Sk	iPn	18	35	01
		iSg	18	37	22
		△=880 km=7.9°.			
	Finland, 61.8°N, 29.0°E. Origin time =18 33 00.				
» 31	Up	ePg	08	51	05
		iSg	08	51	20
				μ	s
		Sg z′		0.1	0.6
		△=130 km=1.2°.			
	Probably the same origin as for the shock on July 30 at 10 11 00. Origin time=08 50 41.				
» 31	Up	iSn	10	06	56
		iS*	10	07	15
		iSg	10	07	31
		△=670 km=6.0°.			
	Ki	ePn	10	06	00
		eSn	10	07	27
		i	10	07	40
		△=790 km=7.1°.			
	Sk	iPn	10	06	13
		eSg	10	08	35
		△=880 km=7.9°.			
	Finland, 61.8°N, 29.0°E. Origin time =10 04 13.				
» 31	Up	eP	10	34	02
				μ	s
		M E		0.6	17
		M Z		0.9	18
	Ki	iP	10	34	40
		iSn	10	41	35
		eSS	10	42	07
				μ	s
		M E		0.7	17
		M N		0.4	14
		M Z		0.6	18
	Sk	iP	10	34	39
	Caspian Sea.				
» 31	Up	iP	14	32	54
	Sk	iP	14	33	33 D
	Greece.				
» 31	Up	iP	18	32	01
	Sk	iP	18	32	09
	Outer Mongolia.				
» 31	Up	iP	19	25	38

1959 July 31	Up	iP	20	00	31
		i	20	00	33
		iPP	20	01	56
		i!	20	08	33
				μ	s
		P z′		0.1	0.8
		PP E		0.4	3
		PP Z		0.2	2
		M E		1.7	13
		M Z		2.6	14
		△=4400 km=39½°.			
	Ki	eS	20	06	39
		eSa	20	08	52
		eSS	20	09	34
				μ	s
		M E		2.6	12
		M N		3.8	13
		M Z		1.5	13
	Sk	iP	20	00	56
		iPP	20	02	34
		iScS	20	10	54
	Gb	iP	20	00	59
		iPP	20	02	37
	Tadzhik, USSR. Magn.=5.9 (Up).				
» 31	Up	iPKP2	21	00	30 D
				μ	s
		PKP2 z′		0.1	0.7
	Sk	iPKP2	21	00	27
	Gb	iPKP2	21	00	48
	North Island, New Zealand (h ~ 200 km).				
Aug 1	Up	iPn	09	26	20
		iSn	09	27	31
		iS*	09	27	51
		iSg	09	28	05
				μ	s
		Sg z′		0.1	0.5
		△=670 km=6.0°.			
	Ki	eSn	09	28	00
		iLg1	09	28	33
		△=800 km=7.2°.			
	Sk	iSg	09	29	12
		△=890 km=8.0°.			
	Finland, 61.7°N, 29.0°E. Origin time= =09 24 48.				
» 1	Up	iPn	12	15	45
		iSn	12	16	58
		iS*	12	17	17
		iSg	12	17	31
				μ	s
		Sg z′		0.1	0.5
		△=670 km=6.0°.			
	Ki	iPn	12	16	03
		eSn	12	17	27
		iLg1	12	17	59
		△=800 km=7.2°.			
	Finland, 61.7°N, 29.0°E. Origin time =12 14 14.				

1959 Aug 1	Up	e(P)		12	31	23
» 1	Up	iP		17	52	45
	Ki	iP		17	51	52
	Sk	iP		17	52	29
	Gb	iP		17	52	59
	Kamchatka.					
» 1	Ki	iP		23	28	52
	Kamchatka.					
» 2	Up	iP		03	36	29
		i!		03	36	42
		iS		03	39	16
		i		03	39	30
				μ	s	
		P	z′	0.1	0.5	
		△=1700 km=15°.				
	Ki	eP		03	37	59
	Sk	iP		03	37	27
		eS		03	41	11
		△=2200 km=20°.				
	Rumania (h ~ 150 km).					
» 2	Up	iP		12	00	25
» 2	Up				—	
				μ	s	
		M	E	0.4	19	
		M	z	0.6	20	
	Ki	ePKP		20	30	25
		ePKS		20	34	08
				μ	s	
		PKP	z′	0.2	2.2	
		M	E	0.6	21	
		M	N	0.1	18	
		M	z	0.5	20	
	Sk	iPKP		20	30	17
	Off coast of Chile.					
» 2	Ki	iP		20	41	22
	Sk	iP		20	41	05
	Puerto Rico.					
» 3	Up	iP		18	32	21
				μ	s	
		P	z′	0.1	0.5	
» 4	Up	ePKP		01	00	34
	Kermadec Islands.					
» 4	Up	iPKP		08	20	$32P_0''$
		i		08	20	$34P_1''$
		iSKP		08	23	25
				μ	s	
		PKP	z′	0.1	0.7	
	Ki	e(PKP)		08	20	$14P_0''$
		iPKP		08	20	26 P″
		iSKP		08	23	00
				μ	s	
		SKP	z′	0.4	2.3	

1959 Aug 4 (cont.)	Sk	i(PKP)		08	10	$26P_0''$
		iPKP		08	20	37 P″
		iSKP		08	23	16
	Gb	iPKP		08	20	45P″C
		iSKP		08	23	35
	Fiji Islands (h ~ 600 km). Multiple PKP phases; see G. Payo Subiza and M. Båth, Geophys. Journal, 8:496—513, 1964. The notations of that paper are given above to the right of the resp. times.					
» 5	Up	iP		05	29	31
		iS		05	40	10
				μ	s	
		S	E	0.2	4	
		△=9800 km=88°.				
	Ki	iP		05	29	13
		iS		05	39	34
				μ	s	
		P	z′	0.1	1.0	
		S	E	0.7	5	
		S	N	0.8	6	
		M	E	0.5	20	
		M	N	0.4	19	
		M	z	0.6	18	
		△=9400 km=84½°.				
	Samar, Philippine Islands. Magn.=6.0 (Ki).					
» 5	Up	iPKP		11	03	49
	Ki	ePKP		11	03	29
	Sk	iPKP		11	03	43
	Kermadec Islands.					
» 5	Up	iP		11	56	03 D
	Rumania (h ~ 150 km).					
» 5	Sk	e(Sg)		13	37	43
» 5	Ki	iP		14	01	47
	Mindanao, Philippine Islands.					
» 5	Up	iP		17	36	56
» 6	Up	i(P)		02	40	46
	Ki	eP		02	38	59
» 6	Ki	e(P)		12	13	45
	Sk	iP		12	13	18
	Turkey.					
» 6	Sk	iP		16	26	50
	Greece. It is a remarkable fact that Skalstugan very often has greater sensitivity to shocks in the Greek area than any other Swedish station, whereas its over-all sensitivity is lower than for Uppsala and Kiruna.					

1959 Aug 7	Up	i(Pg)		07	47	21
		iSg		07	47	44
	Sk	e(Sg)		07	49	44
» 7	Up	iP		10	54	06C
		iS		11	02	41
				μ	s	
		P	z	0.6	4	
		P	z′	0.1	1.0	
		S	E	0.5	5	
		M	E	0.7	18	
		M	z	1.1	18	
		△=7100 km=64°.				
	Ki	iP		10	53	12C
		iS		11	01	00
				μ	s	
		P	N	0.4	5	
		P	z	0.6	4	
		P	z′	0.2	1.0	
		S	E	0.5	9	
		S	N	0.4	9	
		M	E	0.6	15	
		M	N	0.7	18	
		M	z	1.2	18	
		△=6200 km=56°.				
	Sk	iP		10	53	39
	Gb	iP		10	54	15
	Kodiak Island. Magn.=5.9 (Up, Ki).					
» 7	Ki	iP		10	56	09
	Sk	iP		10	56	35
	Kodiak Island.					
» 7	Sk	iP		10	58	30
» 7	Up	iP		10	59	08
	Ki	iP		10	58	14C
				μ	s	
		P	z′	0.2	1.3	
	Sk	iP		10	58	41
	Kodiak Island.					
» 7	Ki	iP		11	00	17 D
	Sk	iP		11	00	43C
	Kodiak Island.					
» 7	Up	iP		19	49	22
				μ	s	
		P	z′	0.1	0.5	
» 7	Up	iP		21	56	01C
		iS		22	04	34
				μ	s	
		P	z	0.6	4	
		P	z′	0.2	0.7	
		S	E	0.3	6	
		M	E	0.8	17	
		M	z	1.4	18	
		△=7100 km=64°.				
	Ki	iP		21	55	07C
		iS		22	02	52

1959 Aug 7 (cont.)				μ	s	
		P	N	0.4	5	
		P	z	0.5	5	
		P	z′	0.6	0.9	
		S	E	0.7	15	
		S	N	0.5	10	
		M	E	0.7	18	
		M	N	0.8	19	
		M	z	2.0	22	
		△=6200 km=56°.				
	Sk	iP		21	55	34C
	Gb	iP		21	56	19
		i		21	56	26
	Kodiak Island. Magn.=6.0 (Up, Ki).					
» 8	Up	iP		00	58	00C
				μ	s	
		P	z′	0.2	1.0	
		M	E	4.1	17	
		M	z	4.3	18	
	Ki	iP		00	57	06C
		i		00	57	19
		iS		01	04	43
				μ	s	
		P	z′	0.2	0.9	
		S	E	1.4	9	
		S	N	1.0	8	
		M	E	6.0	18	
		M	N	5.1	20	
		M	z	3.9	19	
		△=6000 km=54°.				
	Sk	iP		00	57	43C
		iPcP		00	58	29
		△=6650 km=60°.				
	Gb	iP		00	58	24C
		i		00	58	33
	Kamchatka. Magn.=6.0 (Up, Ki).					
» 8	Ki	e(P)		07	56	48
» 8	Ki	iP		12	32	44
» 8	Up	iP		13	51	56
	Ki	iP		13	51	56
				μ	s	
		M	E	0.2	15	
		M	N	0.3	16	
		M	z	0.5	17	
	Tadzhik, USSR.					
» 8	Ki	iP		19	59	00
	Tadzhik, USSR.					
» 8	Up	iP		22	08	16
» 9	Ki	iP		02	48	02
	Halmahera.					
» 9	Up	e		05	09	04
				μ	s	
		M	E	0.4	21	

1959						
Aug 9		M	Z	0.7	21	
(cont.)	Ki	iP		05	00	12
		eSKS		05	10	17
				μ	s	
		SKS	N	0.2	10	
		M	E	1.7	19	
		M	N	0.8	17	
		M	Z	1.5	19	
	Indian Ocean.					
» 9	Up	iP		07	23	22
	(Greece).					
» 9	Up	iP		09	23	06
	Ki	iP		09	22	38C
	Mariana Islands.					
» 9	Up	i(P)		11	26	33
	Ki	iP		11	27	50
		i		11	29	43
	Lake Edward, Central Africa.					
» 9	Up			—		
				μ	s	
		M	E	0.8	20	
		M	Z	0.7	22	
	Ki	e		21	01	21
				μ	s	
		M	E	0.8	21	
		M	N	0.6	20	
		M	Z	1.4	20	
	Solomon Islands.					
» 10	Up	iP		00	42	19
		i		00	42	41
				μ	s	
		M	E	0.6	17	
	Ki	iP		00	43	17
				μ	s	
		M	E	0.5	16	
	Sk	eP		00	42	51
	Crete.					
» 10	Ki	iPKP		00	56	30
				μ	s	
		M	E	0.4	20	
		M	Z	1.0	23	
	Sk	ePKP2		00	56	56
	Indian Ocean, south of Australia.					
» 10	Ki	i(P)		14	06	04
» 10	Ki	i(Sg)		14	11	25
	Sk	e(Sg)		14	12	59
» 10	Sk	iP		17	50	48
	Greece.					
» 10	Up	iP		21	52	24
	Ki	iP		21	51	31
	Sk	iP		21	52	01
	Aleutian Islands.					

1959						
Aug 10	Up	iP		23	17	48
		i		23	17	53
				μ	s	
		M	E	0.6	14	
		M	N	0.9	18	
		M	Z	1.0	21	
	Ki	iP		23	17	24
				μ	s	
		M	E	1.0	19	
		M	N	0.6	21	
		M	Z	1.7	19	
	Sk	iP		23	17	54
	Shansi Province, China.					
» 11	Up	iP		00	49	53
	Ki	iP		00	49	24
	Sk	iP		00	49	51
	Volcano Islands.					
» 11	Ki	i(Sg)		08	13	10
» 11	Up			—		
				μ	s	
		M	N	0.3	15	
	Ki	eP		13	44	25
				μ	s	
		M	E	0.3	15	
		M	N	0.3	13	
		M	Z	0.4	15	
	(Jan Mayen).					
» 11	Up	iP		14	23	57
				μ	s	
		M	N	0.3	14	
	Ki	eP		14	22	51
				μ	s	
		M	E	0.5	16	
		M	N	0.3	15	
		M	Z	0.9	17	
	Sk	eP		14	22	53
	Gb	iP		14	24	00
	Jan Mayen. Origin time = 14 20 13.					
» 11	Sk	eP		14	34	28
» 11	Ki	eP		15	06	30
				μ	s	
		M	E	0.3	15	
		M	N	0.2	14	
		M	Z	0.4	14	
	Sk	eP		15	06	35
	Gb	iP		15	07	50
	Jan Mayen.					
» 11	Up	iP		15	35	33C
	Sk	iP		15	35	24
	Kurile Islands.					
» 11	Up	iP		16	15	59
				μ	s	
		P	Z′	0.1	0.5	
	Ki	iP		16	14	39

1959						
Aug 11				μ	s	
(cont.)		M	E	0.4	16	
		M	N	0.3	15	
		M	Z	0.5	16	
	Sk	iP		16	14	44
		eS		16	16	49
		△ = 1200 km = 11°.				
	Jan Mayen.					
» 11	Up	iP		16	49	00
	Ki	iP		16	49	01
	Nicobar Islands.					
» 11	Up	i(P)		17	50	02
» 11	Sk	iP		18	14	23
» 11	Up	iP		18	18	54
				μ	s	
		M	E	0.5	19	
		M	N	0.7	15	
		M	Z	1.0	16	
	Ki	iP		18	17	48
				μ	s	
		M	E	1.2	16	
		M	N	0.9	15	
		M	Z	1.9	17	
	Sk	iP		18	17	56C
		iS		18	19	59
		△ = 1200 km = 11°.				
	Gb	eP		18	18	57
	Jan Mayen. Origin time = 18 15 11.					
» 11	Up			—		
				μ	s	
		M	E	0.4	21	
		M	N	0.9	23	
		M	Z	0.8	23	
	Ki	iPKP		22	08	32
				μ	s	
		M	E	0.7	22	
		M	N	0.6	23	
		M	Z	0.7	20	
	Sk	iPKP		22	08	43
	Solomon Islands.					
» 11	Up	iP		23	32	26
		i		23	39	13
				μ	s	
		M	N	0.5	11	
	Ki	iP		23	33	44
				μ	s	
		M	N	0.3	13	
		M	Z	0.5	13	
	Sk	iP		23	33	11
		i		23	33	20
	Macedonia-Yugoslavia.					
» 12	Up	eL		01	20	
				μ	s	
		M	E	0.4	19	

1959						
Aug 12		M	Z	0.6	19	
(cont.)	Ki	eL		01	20	
				μ	s	
		M	E	0.9	18	
		M	Z	1.4	17	
	Nicaragua.					
» 12	Up	eP		01	35	59
	Ki	iP		01	34	52
				μ	s	
		M	E	0.6	16	
		M	N	0.4	13	
		M	Z	0.9	15	
	Sk	iP		01	35	01
	Gb	iP		01	36	03
	Jan Mayen. Origin time = 01 32 16.					
» 12	Up	iP		04	17	04C
				μ	s	
		P	Z′	0.1	0.5	
		M	E	0.6	21	
		M	N	0.7	18	
	Ki	iP		04	17	47C
				μ	s	
		P	Z′	0.1	1.0	
		M	N	0.3	17	
		M	Z	0.5	16	
	Sk	iP		04	17	28C
	Rhodesia.					
» 12	Up	iP		09	06	21C
	Ki	iP		09	05	55C
	(Mongolia).					
» 12	Up	iPKP		10	17	48
		e		10	20	54
		i		10	21	05
		iPKS		10	21	19
				μ	s	
		M	E	4.5	19	
		M	N	9.5	22	
		M	Z	9.4	22	
	Ki	iPKP		10	17	33
		i(PP)		10	19	16
		i!		10	25	01
				μ	s	
		PKP	Z′	0.1	1.7	
		(PP)	Z	0.4	5	
		M	E	5.4	23	
		M	N	9.4	20	
		M	Z	19	21	
	Sk	iPKP		10	17	43
	Fiji Islands. Magn. = 6.5 (Up, Ki).					
» 12	Up	eP		19	08	37
	Ki	iP		19	08	24
	Sk	iP		19	08	51
	China.					
» 12	Ki	iP		23	53	27

1959
Aug 13 Up iP 00 38 59
i 00 39 18
i 00 39 39
eS 00 43 53

		μ	s
P	Z′	0.1	0.6
S	E	0.1	3
M	E	1.0	15
M	N	1.0	13
M	Z	1.2	15

△=3100 km=28°.

Ki iP 00 39 36 D
iS 00 44 46
iSn 00 45 42
ePcS 00 46 02
i! 00 47 11

		μ	s
P	Z′	0.2	1.0
M	E	0.9	15
M	N	0.9	16
M	Z	0.9	16

△=3550 km=32°.

Sk iP 00 39 35 D
i 00 39 46

Caspian Sea. Magn.=5.8 (Up, Ki). Sn, which is very clear on the short-period vertical record at Kiruna, has a group velocity of 4.73 km/sec.

» 13 Up iP 00 53 26

» 13 Ki e(P) 13 40 46
Sk iP 13 41 43
Local?

» 13 Up iP 15 41 46
Ki iP 15 40 53
iPcP 15 41 37
Aleutian Islands.

» 14 Up iPKP 01 19 39 C
Sk iPKP 01 19 33 C
South Pacific.

» 14 Up ePKP 04 07 28
Kermadec Islands.

» 14 Up iP 04 52 49
i 04 52 59
i 04 56 22
iPP 04 56 55
△=11050 km=99½°.

Ki iP 04 52 34 C

		μ	s
P	Z′	0.1	1.4

Sk iP 04 52 55
Gb iP 04 53 11 D
Molucca Passage.

1959
Aug 14 Up iPKP 23 51 21
i 23 51 26
Sk iPKP 23 51 16
Kermadec Islands.

» 15 Up iP 00 57 45
Ki iP 00 57 53
Sk iP 00 58 10
Hindu Kush (h ~ 150 km).

» 15 Up iP 06 34 09
Sk eP 06 33 45
Unimak Island.

» 15 Gb iP 09 05 07

» 15 Up iP 09 08 59 C
iPP 09 12 06
iPa 09 13 44
iS 09 18 46

		μ	s
P	E	10	18
P	N	5.4	18
P	Z	32	18
P	Z′	0.6	0.7
PP	E	6.4	17
S	E	36	16
S	N	33	16
S	Z	32	27
M	E	170	19
M	N	190	20
M	Z	200	18

△=8550 km=77°.

Ki iP 09 08 36 C
i 09 08 41
iPa 09 13 10
i 09 14 43
iS 09 18 04

		μ	s
P	E	10	18
P	N	2.1	16
P	Z	25	18
P	Z′	1.6	1.0
S	E	29	15
S	N	14	13
S	Z	17	18
M	E	150	17
M	N	100	15
M	Z	230	17

△=8150 km=73½°.

Sk iP 09 09 03
iPP 09 12 03
iS 09 19 00
i 09 19 43
Gb iP 09 09 20
Formosa. Magn.=7.2 (Up, Ki). The average velocity of Pa is about 8.5 km/sec; see M. Båth and A. Lopez Arroyo, Geofis. pura e appl., 56:67—92, 1963.

1959
Aug 15 Up i(P) 09 15 21

» 15 Gb i(P) 09 20 04

» 15 Up i(PKP) 13 34 45
i 13 34 58
Ki i(PKP) 13 34 25
i 13 34 40
(Tonga Islands). The (PKP) phases are remarkably late; may be confusion from another earthquake.

» 15 Up iP 18 52 18

		μ	s
P	Z′	0.1	1.0
M	E	0.4	16
M	N	0.5	16
M	Z	0.5	17

Ki iP 18 51 24 D
i 18 51 36

		μ	s
P	Z′	0.1	1.0
M	E	0.6	15
M	N	0.5	17

Sk iP 18 52 01
Gb iP 18 52 38 D
Kamchatka. Magn.=5.7 (Up, Ki).

» 15 Ki iP 23 08 53
Sk eP 23 08 42
Costa Rica (h ~ 200 km).

» 16 Up ePKS 01 14 39

		μ	s
PKS	N	0.3	6

Ki iPKP 01 10 39
ePP 01 13 02
iPKS 01 14 11

		μ	s
PP	N	0.3	8
PKS	E	0.5	7

Sk ePKP 01 11 04
Loyalty Islands. The surface waves of this earthquake are mixed with those of the following earthquake.

» 16 Up iP 01 33 02
iS 01 42 51

		μ	s
P	Z′	0.1	1.0
S	E	0.9	10
S	N	0.8	10

△=8600 km=77½°.

Ki iP 01 32 39 D
iS 01 42 10

		μ	s
P	Z′	0.1	1.0
S	E	1.1	10

△=8150 km=73½°.

1959
Aug 16 Sk iP 01 33 07
(cont.) Gb iP 01 33 19
Formosa. Magn.=5.9 (Up, Ki).

» 16 Ki iP 07 19 55

		μ	s
M	E	0.2	12
M	N	0.4	13

Caspian Sea.

» 16 Up iP 13 40 00
Ki iP 13 40 46 C
Arabia.

» 16 Up eP 18 04 33

		μ	s
M	E	0.6	15
M	Z	0.8	16

Ki —

		μ	s
M	E	0.3	14
M	N	0.3	12

(China).

» 16 Up iP 18 47 02
i 18 47 09
iS 18 51 04

		μ	s
P	N	0.3	3
P	Z	0.4	3
P	Z′	0.2	1.0
S	E	0.3	3
S	N	0.7	5
M	E	1.7	18
M	N	1.6	16
M	Z	1.9	15

△=2550 km=23°.

Ki iP 18 48 15

		μ	s
P	Z′	0.1	1.5
M	E	1.1	15
M	N	0.7	17

Sk iP 18 47 41
i 18 47 48
Gb iP 18 46 48
i 18 46 52
Greece. Magn.=5.5 (Up, Ki). The wave arriving 4—7 sec after the first onset has much larger amplitudes than the first P wave. This is typical for earthquakes in this area, at least as recorded by Swedish stations.

» 17 Up iP 01 14 32
Ki iP 01 14 09

		μ	s
P	Z′	0.1	1.3

Sk iP 01 14 42
Gb eP 01 14 59
Formosa.

1959 Aug 17	Up	iPKP		01	20	51
	Gb	iPKP		01	20	59
	Fiji Islands.					
» 17	Up	iP		01	37	36C
		i		01	37	48
		iS		01	41	01
		i!		01	44	10
				μ	s	
		P	N	2.3	5	
		P	Z	2.0	5	
		P	Z′	0.3	0.5	
		S	E	13	15	
		S	Z′	0.6	2.0	
		M	E	23	13	
		M	N	24	15	
		M	Z	24	16	
		△=2100 km=19°.				
	Ki	iP		01	38	56C
		i		01	39	08
		iS		01	43	31
		iLg2		01	47	59
		iRg		01	50	03
				μ	s	
		P	N	0.6	8	
		P	Z	0.5	10	
		P	Z′	0.4	1.5	
		S	E	2.4	14	
		S	N	1.6	10	
		M	E	21	12	
		M	N	25	13	
		M	Z	37	13	
		△=3000 km=27°.				
	Sk	iP		01	38	21
		i		01	38	34
		iS		01	42	33
		i(Rg)		01	48	25
	Gb	iP		01	37	18
		i		01	37	28
	Albania. Magn.=5.8 (Up, Ki). The wave arriving 10—13 sec after the first onset has much larger amplitudes than the first P. Compare the remark to the earthquake in Greece, August 16, 1959, at 18 47.					
» 17	Up	iP		04	33	23
		i		04	33	25
		iS		04	36	50
				μ	s	
		P	N	0.2	4	
		S	E	0.9	14	
		M	E	1.8	12	
		M	N	2.1	15	
		M	Z	2.5	16	
		△=2100 km=19°.				
	Ki	iP		04	34	43
				μ	s	
		M	E	1.3	12	
		M	N	1.9	14	

1959 Aug 17 (cont.)		M	Z	2.8	14	
	Sk	iP		04	34	08
	Gb	eP		04	33	06
		i		04	33	18
	Albania.					
» 17	Up	iP		04	39	16
	Ki	iP		04	38	53
	Sk	eP		04	39	17
	Formosa.					
» 17	Ki	iP		05	08	01D
				μ	s	
		M	E	0.8	12	
		M	N	0.3	11	
		M	Z	0.7	12	
	Aleutian Islands.					
» 17	Up	iP		08	09	59
	Ki	eP		08	09	37
	Formosa.					
» 17	Up	iP		08	37	11
				μ	s	
		M	E	0.7	13	
		M	N	0.9	17	
		M	Z	1.2	15	
	Ki	iP		08	36	48
				μ	s	
		M	E	1.4	13	
		M	N	0.7	12	
		M	Z	1.1	12	
	Sk	iP		08	37	20
	Formosa.					
» 17	Up			—		
				μ	s	
		M	E	1.6	17	
		M	N	0.7	15	
		M	Z	1.4	15	
	Ki	e		09	04	35
				μ	s	
		M	E	2.2	12	
		M	N	0.8	12	
		M	Z	2.3	12	
» 17	Up	iP		09	23	16
	Ki	iP		09	22	51
	Hindu Kush.					
» 17	Up	iP		11	07	55
	Ki	iP		11	07	07
	Honshu, Japan.					
» 17	Ki	iP		12	50	32
	Formosa.					
» 17	Ki	eL		13	25	
				μ	s	
		M	E	0.5	13	
		M	N	0.2	12	

1959 Aug 17 (cont.)		M	Z	0.3	13	
	Chile.					
» 17	Ki	e(P)		14	00	34
		e(Sg)		14	00	49
» 17	Ki	e(Sg)		15	05	26
» 17	Up	iSg		16	50	48
		△=720 km=6.5°.				
	Ki	iSn		16	51	05
		iSg		16	52	04
		△=980 km=8.8°.				
	Sk	ePg		16	48	34
		i		16	49	22
		iSg		16	49	27
		△=440 km=4.0°.				
	Gb	eSg		16	50	19
		△=620 km=5.6°.				
	West coast of Norway, 62.0°N, 5.0°E. Origin time=16 47 14.					
» 17	Up	iP		21	21	56
				μ	s	
		P	Z′	0.1	0.8	
	Ki	iP		21	21	35
				μ	s	
		P	Z′	0.5	1.0	
	Sk	iP		21	22	02D
	Gb	iP		21	22	24
» 17	Up	iPKP		21	23	36
		iPP		21	24	43
		iPKKP		21	33	49
		i		21	36	10
				μ	s	
		PP	E	0.7	5	
		PP	N	0.5	5	
		PP	Z	1.2	5	
		PP	Z′	0.5	2.0	
		PKKP	Z′	0.4	2.2	
		M	E	50	18	
		M	N	44	18	
		M	Z	56	20	
		△~13100 km~118°.				
	Ki	ePKP		21	23	21
		iPP		21	24	09
		iSKSP		21	33	47
		i		21	34	54
				μ	s	
		PP	E	0.4	5	
		PP	N	0.3	5	
		PP	Z	1.0	5	
		SKSP	E	5.7	10	
		SKSP	N	3.1	9	
		SKSP	Z	3.2	9	
		M	E	46	19	
		M	N	29	17	
		M	Z	61	21	
		△~12450 km~112°.				

1959 Aug 17 (cont.)	Sk	iPP		21	24	30
		iPKKP		21	33	56
		iPcPPKP		21	37	51
	Gb	iPKP		21	23	48
		iPP		21	25	23
	Solomon Islands. Magn.=7.0 (Up, Ki).					
» 17	Up	iP		22	46	08
	Ki	iP		22	45	46
» 18	Ki	iP		00	43	02
				μ	s	
		P	Z′	0.1	1.3	
	Sk	iP		00	43	21
	Celebes (h~200 km).					
» 18	Up	iP		00	45	40D
		ipP		00	46	28
		iS		00	55	18
		isS		00	56	34
				μ	s	
		P	E	0.7	2	
		P	Z	2.3	2	
		P	Z′	0.7	0.8	
		S	E	0.6	3	
		M	E	2.3	20	
		M	N	2.3	19	
		M	Z	2.3	20	
		△=8500 km=76½°.				
	Ki	iP		00	45	18D
		ipP		00	46	05
		iS		00	54	37
				μ	s	
		P	E	0.7	5	
		P	Z	1.0	5	
		P	Z′	1.1	1.0	
		S	E	1.5	9	
		S	N	0.5	10	
		M	E	1.3	18	
		M	N	0.8	16	
		M	Z	1.3	14	
		△=8100 km=73°.				
	Sk	iP		00	45	45D
		i(pP)		00	46	22
	Gb	iP		00	46	00D
		i(pP)		00	46	38
		iPP		00	49	08
	Formosa. h=190 km (Up, Ki). Magn= =6.8 (Up, Ki).					
» 18	Up	iP		05	25	07
	Gb	iP		05	25	08
	Oregon, USA.					
» 18	Up	iP		06	48	12D
		i		06	48	19
		iPP		06	50	42
		i(Pa)		06	52	19
		iS		06	57	13
		iP′P′		07	16	34

1959
Aug 18
(cont.)

			μ	s	
	P	E	12	16	
	P	N	24	16	
	P	Z	57	18	
	P	Z′	1.7	1.0	
	PP	E	8.0	17	
	PP	N	15	17	
	PP	Z	23	18	
	△=7550 km=68°.				
Ki	iP		06	47	36
	i		06	47	40
	iPP		06	49	59
	iPa		06	51	31
	iS		06	56	00
	iP′P′		07	16	55
			μ	s	
	P	E	11	15	
	P	N	13	16	
	P	Z	43	16	
	P	Z′	5.3	1.6	
	PP	Z	17	16	
	P′P′	Z′	1.9	2.0	
	M	E	340	18	
	M	N	260	17	
	M	Z	370	17	
	△=6900 km=62°.				
Sk	iP		06	47	48 D
	i		06	48	01
	iP′P′		07	16	51
Gb	iP		06	48	16D
	i		06	48	18
	i		06	48	29
	iP′P′		07	16	34
	Montana, USA. Magn.=7.5 (Up, Ki).				
» 18	Up	iP	06	55	28 D
			μ	s	
	P	Z′	0.4	1.3	
	Ki	iP	06	54	56
			μ	s	
	P	Z′	0.5	1.5	
» 18	Up	iP	08	05	28 C
	Ki	iP	08	04	51
	Montana.				
» 18	Up	iP	08	07	14
		i	08	07	16
		iPcP	08	07	42
			μ	s	
	P	Z′	0.4	1.5	
	Ki	iP	08	06	38
			μ	s	
	P	Z′	0.3	1.5	
	Sk	iP	08	06	46
	Gb	iP	08	07	14
	Montana. Magn.=6.2 (Up, Ki).				
» 18	Up	iP	08	52	45
	Ki	iP	08	52	09

1959
Aug 18
(cont.)

			μ	s	
	P	Z′	0.1	1.5	
	Sk	iP	08	52	23
	Montana.				
» 18	Up	iP	11	14	46
			μ	s	
		M E	1.4	21	
		M N	1.7	23	
		M Z	2.9	25	
	Ki	iP	11	14	09
			μ	s	
		M E	1.2	16	
		M N	1.8	18	
		M Z	3.2	16	
	Montana. Magn.=5.5 (Up, Ki).				
» 18	Up	iP	15	37	04 D
		eS	15	45	56
			μ	s	
		P N	0.5	4	
		P Z	1.0	4	
		P Z′	1.0	2.0	
		S E	3.6	13	
		S N	6.4	13	
		S Z	1.6	10	
		M E	18	22	
		M N	22	23	
		M Z	29	24	
		△=7500 km=67½°.			
	Ki	iP	15	36	27 D
		ePa	15	40	11
		iS	15	44	49
		i	15	45	38
		i	15	53	37
		i	15	54	35
		iP′P′	16	05	41
			μ	s	
		P E	0.8	7	
		P N	0.8	10	
		P Z	2.2	10	
		P Z′	0.9	2.0	
		S E	2.3	11	
		S N	4.0	11	
		S Z	2.1	11	
		P′P′ Z′	0.4	2.0	
		M E	11	15	
		M N	15	17	
		M Z	23	16	
		△=6900 km=62°.			
	Sk	iP	15	36	35 D
		i	15	36	58
	Gb	iP	15	37	04
		iPP	15	39	46
	Montana. Magn.=6.5 (Up, Ki). This is the largest aftershock in the Montana sequence. As an average of determinations at 9 stations, its magnitude is 1.1 lower than for the main shock				

1959
Aug 18
(cont.)

	(compare Richter: Elementary Seismology, 1958, p. 69).				
» 18	Up	iP	15	46	41
		i	15	46	46
			μ	s	
		P Z′	0.1	0.7	
	Ki	iP	15	46	09
			μ	s	
		P Z′	0.2	1.3	
	Sk	iP	15	46	17 C
	Montana. Magn.=6.0 (Up, Ki).				
» 18	Up	iPg	16	29	38 C
		iSg	16	30	29
		△=420 km=3.8°.			
	Sk	eSg	16	31	30
		△=620 km=5.6°.			
	Gb	iPg	16	28	36
		iSg	16	28	43
		△=60 km=0.5°.			
	Off the west coast of Sweden (Bohuslän), 58.1°N, 11.3°E. Origin time= =16 28 24.				
» 18	Up	iP	22	08	27
		i	22	08	30
		eS	22	11	56
			μ	s	
		S E	0.4	6	
		S N	0.3	5	
		M E	1.1	17	
		M N	1.2	15	
		M Z	1.3	17	
		△=2100 km=19°.			
	Ki	iP	22	09	44
			μ	s	
		M E	1.0	16	
		M N	1.2	14	
		M Z	2.0	14	
	Sk	iP	22	09	11
	Gb	i(P)	22	08	30
	Albania.				
» 19	Up	iP	04	15	03
		iS	04	24	00
			μ	s	
		P Z′	0.1	1.0	
		S E	0.4	7	
		M E	2.3	19	
		M N	4.0	18	
		M Z	3.1	21	
		△=7550 km=68°.			
	Ki	iP	04	14	25
		iS	04	22	51
			μ	s	
		P Z′	0.2	1.5	
		S E	0.7	7	
		S N	0.4	11	
		M E	4.1	16	

1959
Aug 19
(cont.)

		M N	2.5	18	
		M Z	5.8	16	
		△=6950 km=62½°.			
	Sk	iP	04	14	33
	Gb	iP	04	14	57
	Montana. Magn.=5.8 (Up, Ki).				
» 19	Up	i(P)	07	16	46
» 19	Up	iP	07	20	25
			μ	s	
		M E	0.9	16	
		M N	0.8	20	
		M Z	1.3	16	
	Ki	iP	07	20	03
			μ	s	
		P Z′	0.1	1.0	
		M E	0.8	15	
		M N	0.5	14	
		M Z	0.6	13	
	Sk	eP	07	20	18
	Formosa.				
» 19	Up	eP	14	22	08
» 19	Sk	eP	14	36	08
	Honshu, Japan.				
» 19	Up	iP	15	35	24 C
		i!	15	35	38
		iS	15	38	16
		i	15	39	44
			μ	s	
		P N	0.2	2	
		P Z′	0.1	0.6	
		i! Z′	0.3	1.0	
	Ki	iP	15	36	47
		i	15	36	53
			μ	s	
		P Z′	0.1	1.0	
	Sk	iP	15	36	17
		i	15	36	34
	Gb	iP	15	35	27 C
	Rumania (h ~ 150 km).				
» 19	Up	iP	18	39	26 C
			μ	s	
		P Z′	0.1	0.5	
» 19	Up	iP	19	17	26 C
	Ki	iP	19	16	49
	Montana.				
» 20	Up	eL	13	15	
			μ	s	
		M E	0.6	20	
		M N	0.6	21	
		M Z	0.6	19	
	Ki	eL	13	15	

1959 Aug 20 (cont.)		M	E	μ 0.7	s 17	
		M	N	0.3	17	
	Indian Ocean.					
» 20	Up	eP		19	22	25
	Ki	iP		19	21	48
	Montana.					
» 20	Up	iP		21	19	05
		i(pP)		21	19	28
	Ki	iP		21	19	17
	Sk	iP		21	19	31
		ePP		21	21	18
	Hindu Kush.					
» 21	Up	iP		07	23	00C
		P	z′	μ 0.1	s 0.5	
		M	E	0.4	16	
		M	N	0.9	15	
		M	z	0.5	15	
	Ki	eP		07	22	36
		M	E	μ 0.7	s 12	
		M	N	0.9	15	
	Sk	eP		07	23	09
	Gb	eP		07	23	24
	Kansu Province, China.					
» 21	Up	iPKP		08	22	58
		PKP	z	μ 0.5	s 6	
		PKP	z′	0.1	1.3	
	Ki	iPKP		08	22	57C
		e		08	23	20
		PKP	z′	μ 0.5	s 1.5	
	Sk	iPKP		08	23	05C
	Gb	iPKP		08	23	07
		i		08	23	17
		i		08	23	42
	Indian Ocean, south of Australia. Origin time = 08 03 15.					
» 21	Up	iPKP		08	25	16C
		i(SKKS)		08	35	30
		PKP	z	μ 0.7	s 4	
		PKP	z′	0.1	1.0	
		M	E	1.4	21	
		M	N	2.0	20	
		M	z	2.6	20	
	Ki	iPKP		08	25	14
		PKP	E	μ 0.3	s 9	
		PKP	z′	0.9	2.0	
		M	E	2.2	19	
		M	N	1.5	19	
	Sk	iPKP		08	25	24C
	Gb	iPKP		08	25	25

1959 Aug 21 (cont.)	Indian Ocean, south of Australia. Origin time = 08 05 33. Magn. = 6.0 (Up, Ki).					
» 21	Up	iPKP		09	57	33
		i		09	57	41
		PKP	z	μ 0.6	s 4	
		PKP	z′	0.1	1.1	
		M	E	0.8	20	
		M	N	1.3	21	
		M	z	0.9	19	
	Ki	iPKP		09	57	32
		i		09	57	39
		PKP	z′	μ 0.7	s 1.7	
		M	E	0.8	19	
		M	N	0.9	18	
	Sk	iPKP		09	57	39
		i		09	57	41
		i		09	57	48
	Gb	iPKP		09	57	40
		i		09	57	49
	Indian Ocean, south of Australia.					
» 21	Up	iPg		13	24	52
		iS*		13	25	35
		iSg		13	25	43
		△ = 430 km = 3.9°.				
	Ki	eS*		13	27	52
		iSg		13	28	23
		△ = 970 km = 8.7°.				
	Sk	e		13	26	59
		iSg		13	27	35
		△ = 810 km = 7.3°.				
	North coast of Esthonia, 59.6°N, 25.0°E. Origin time = 13 23 34. Seismic?					
» 21	Up	iP		15	12	02C
» 21	Up	iPKP		16	59	59
	Gb	iPKP		17	00	10
	Tonga Islands.					
» 22	Up	iP		09	49	57D
» 22	Up	iP		23	56	17
	Ki	iP		23	56	41C
	Sk	iP		23	56	48D
	Gb	iP		23	56	30D
	Afghanistan-Pakistan.					
» 23	Up	iP		03	27	25
		i		03	30	01
		P	z′	μ 0.1	s 0.7	
	Ki	iP		03	27	41
	Sk	iP		03	27	53C
	West Pakistan.					

1959 Aug 23	Up	iP		05	48	09
	Sk	iP		05	48	36
	West Pakistan.					
» 23	Up	iP		22	27	17
		i		22	27	23
		eS		22	32	21
		P	z′	μ 0.3	s 1.5	
		S	E	0.9	11	
		S	N	1.5	13	
		M	E	2.1	16	
		M	N	2.0	20	
		M	z	1.4	18	
		△ ~ 3100 km ~ 28°.				
	Ki	iP		22	28	23
		i		22	28	27
		eS		22	34	01
		P	z′	μ 0.8	s 1.7	
		M	E	4.2	15	
		M	N	2.1	16	
		M	z	2.1	12	
		△ = 3950 km = 35½°.				
	Sk	iP		22	27	35C
		i		22	27	40
	Gb	iP		22	26	51
	Mediterranean Sea, north of Spanish Morocco. Magn. = 5.5 (Up, Ki).					
» 23	Up	iP		22	30	35
» 24	Ki	eP		00	39	01
» 24	Up	iP		01	36	48
	Ki	iP		01	37	33
	Sk	e(P)		01	37	23
	Tanganyika.					
» 24	Up	iP		08	23	50
		i(pP)		08	24	15
	Ki	iP		08	23	37
		i(pP)		08	24	03
	Sk	iP		08	24	28D
	Burma.					
» 24	Up	iP		12	39	49
		P	z′	μ 0.1	s 0.5	
	Ki	iP		12	38	56
	Sk	iP		12	39	34
	Kamchatka.					
» 24	Ki	eL		16	45	
		M	N	μ 0.3	s 18	
	Solomon Islands.					
» 24	Up	iP		16	50	22

1959 Aug 24	Up	iP		20	51	11C
» 24	Up	iPP		21	51	38
		i		21	52	31
		i		21	58	29
		PP	z	μ 2.0	s 16	
		M	E	17	21	
		M	N	19	22	
		M	z	28	23	
		△ ~ 13650 km ~ 123°.				
	Ki	iPKP		21	49	45
		ePP		21	50	50
		i		21	51	23
		e(PS)		22	00	30
		i		22	00	53
		M	E	μ 18	s 18	
		M	N	21	20	
		M	z	19	20	
		△ ~ 12900 km ~ 116°.				
	Sk	ePKP		21	49	49
	Solomon Islands. Magn. = 6.8 (Up, Ki).					
» 25	Up	i(P)		00	58	46
» 25	Up	iP		07	19	14
» 25	Sk	iP		12	02	53
	Gb	iP		12	01	53
	Albania.					
» 25	Up	i(P)		22	43	28
		i		22	43	55
» 26	Up	iP		08	38	09C
		i(pP)		08	38	19
		iPP		08	41	25
		iS		08	48	36
		i		08	49	59
		P	E	μ 1.2	s 5	
		P	z	3.8	4	
		P	z′	0.8	0.7	
		PP	z	1.0	4	
		S	E	7.5	18	
		S	N	7.2	15	
		M	E	11	22	
		M	N	5.6	21	
		M	z	15	23	
		△ = 9500 km = 85½°.				
	Ki	iP		08	37	55C
		i(pP)		08	38	06
		iS		08	48	10
		P	E	μ 2.8	s 5	
		P	N	1.5	4	
		P	z	5.2	4	
		P	z′	3.7	2.0	
		S	E	4.4	15	
		S	N	2.6	12	

1959
Aug 26 (cont.)

	M	E	19	24	
	M	N	9.4	24	
	M	Z	19	24	
	△=9150 km=82½°.				
Sk	iP		08	37	49C
	i(pP)		08	38	00
Gb	iP		08	37	59C
	i		08	39	10
Vera Cruz, Mexico. Magn.=6.9 (Up, Ki).					
» 26 Up	iP		10	38	33
	iS		10	47	29
	iScS		10	48	35
			μ	s	
	P	N	0.6	4	
	P	Z	1.1	6	
	P	Z′	0.7	1.5	
	S	N	3.5	16	
	M	E	11	22	
	M	N	22	22	
	M	Z	27	23	
	△=7500 km=67½°.				
Ki	iP		10	37	47
	i		10	37	57
	iS		10	46	01
			μ	s	
	P	Z	1.5	5	
	P	Z′	0.9	2.0	
	S	E	3.1	10	
	S	N	2.0	9	
	M	E	21	19	
	M	N	22	21	
	M	Z	33	23	
	△=6650 km=60°.				
Sk	iP		10	38	08C
Gb	iP		10	38	42C
Queen Charlotte Islands. Magn.=6.5 (Up, Ki).					
» 26 Ki	i(P)		14	09	39
» 27 Up	iP		04	39	34
» 27 Up	iP		15	02	43
	iPcP		15	03	14
Okhotsk Sea (h ~ 200 km).					
» 27 Up	iP		18	35	34
			μ	s	
	P	Z′	0.1	0.6	
» 28 Up	iP		00	03	39
			μ	s	
	P	Z′	0.2	0.5	
	M	N	1.9	19	
Ki	iP		00	03	31
	i(pP)		00	03	44
	i		00	03	59
			μ	s	
	P	Z′	0.1	1.0	

1959
Aug 28 (cont.)

	M	E	1.5	18	
	M	N	1.0	16	
Sk	iP		00	03	55
	i(pP)		00	04	07
Gb	iP		00	04	08
Burma. Magn.=6.1 (Up, Ki).					
» 29 Up	iP		02	07	49
Ki	iP		02	07	00
Kurile Islands.					
» 28 Ki	iP		08	00	40
Venezuela.					
» 28 Up	iPg		08	25	26
	iSg		08	25	43
			μ	s	
	Pg	Z′	0.2	0.5	
	Sg	Z′	0.1	0.5	
	△=140 km=1.3°.				
Sk	eSg		08	28	01
	△=670 km=6.0°.				
Central Baltic, 58¾°N, 19°E. Origin time=08 24 43. Probably explosion.					
» 28 Up	iPg		08	30	58
	iSg		08	31	14
	iL		08	31	24
			μ	s	
	L	Z′	0.1	0.6	
	△=140 km=1.3°.				
Central Baltic. Origin time= =08 30 13. Probably explosion.					
» 28 Up	iPg		08	34	36
	iSg		08	34	52
	iL		08	35	00
			μ	s	
	Pg	Z′	0.1	0.5	
	Sg	Z′	0.1	0.5	
	L	Z′	0.2	0.8	
	△=130 km=1.2°.				
Central Baltic. Origin time= =08 33 56. Probably explosion.					
» 28 Up	iPg		08	40	19
	iSg		08	40	35
			μ	s	
	Pg	Z′	0.1	0.5	
	Sg	Z′	0.1	0.5	
	△=130 km=1.2°.				
Central Baltic. Origin time= =08 39 39. Probably explosion.					
» 28 Up	iPg		09	12	34
	iSg		09	12	50
	iL		09	12	56
			μ	s	
	L	Z′	0.1	0.7	

1959
Aug 28 (cont.)

△=130 km=1.2°.					
Central Baltic. Origin time= =09 11 54. Probably explosion.					
» 28 Up	iP		12	17	26C
			μ	s	
	P	Z′	0.1	0.7	
Ki	iP		12	16	29C
			μ	s	
	P	Z′	0.3	1.5	
Sk	iP		12	16	57
Gb	iP		12	17	38
Alaska. Magn.=6.0 (Up, Ki).					
» 28 Ki	e		13	57	48
Sk	e(Sg)		13	57	20
» 28 Ki	iPKP		16	11	15
New Hebrides Islands.					
» 28 Up	i(P)		16	44	34C
			μ	s	
	(P)	Z′	0.1	0.6	
» 29 Ki	iP		05	39	28
Sinkiang Province, China.					
» 29 Ki	eP		10	46	34
Turkey.					
» 29 Ki	iP		13	58	56
Mediterranean Sea, north of Spanish Morocco.					
» 29 Up	iP		17	11	40
	iPP		17	13	33
	iS		17	18	26
			μ	s	
	P	E	0.9	7	
	P	N	1.0	7	
	P	Z	3.3	7	
	P	Z′	1.5	1.8	
	PP	E	2.4	6	
	S	E	17	22	
	S	N	9.9	22	
	M	E	60	17	
	M	N	60	15	
	M	Z	78	15	
	△=5150 km=46½°.				
Ki	iP		17	11	01
	i		17	11	05
	iPP		17	12	43
	iS		17	17	19
	iSS		17	20	19
	iSa		17	20	44
			μ	s	
	P	E	1.9	7	
	P	Z′	1.8	2.0	
	PP	E	5.2	6	
	PP	N	1.7	7	
	PP	Z′	5.2	3.0	

1959
Aug 29 (cont.)

	S	E	20	20	
	S	N	4.1	19	
	M	E	42	10	
	M	N	26	10	
	△=4650 km=42°.				
Sk	iP		17	11	41
Gb	iP		17	12	11
	i		17	14	51
	i		17	19	40
Lake Baikal, USSR. Magn.=6.7 (Up, Ki).					
» 29 Ki	iPKP		21	39	32
New Hebrides Islands.					
» 30 Up	eS		03	35	53
			μ	s	
	S	E	0.4	11	
	S	N	0.5	11	
	M	E	0.8	14	
	M	N	1.0	15	
	M	Z	0.6	10	
Ki	iP		03	31	47
	i		03	31	52
			μ	s	
	P	Z′	0.2	1.5	
	M	E	2.2	15	
	M	N	1.3	15	
Sk	iP		03	31	00
Gb	iP		03	30	22D
Mediterranean Sea, north of Spanish Morocco.					
» 30 Up	iPKP		11	42	16C
Gb	iPKP		11	42	25D
Tonga Islands.					
» 30 Ki	iP		13	52	54C
Sk	iP		13	53	23
Alaska.					
» 30 Up				—	
			μ	s	
	M	E	0.8	20	
	M	Z	1.0	20	
Ki	iP		14	47	14
	i		14	47	23
			μ	s	
	M	E	0.7	17	
	M	N	0.4	13	
Sk	eP		14	47	54
	i		14	48	32
Lake Baikal, USSR.					
» 30 Sk	eP		20	29	19
» 30 Up				—	
			μ	s	
	M	E	1.0	18	
	M	N	1.2	20	
	M	Z	1.4	18	

1959						
Aug 30	Ki	e		22	11	47
(cont.)				μ	s	
		M	E	1.7	19	
		M	N	0.9	17	
	Indian Ocean.					
» 30	Up	iP		23	04	34
		iPP		23	06	24
				μ	s	
		M	E	2.1	15	
		M	N	4.3	18	
		M	Z	3.1	15	
		△ ~ 4550 km ~ 41°.				
	Ki	iP		23	04	45
		iPP		23	06	28
				μ	s	
		PP	Z′	0.1	1.1	
		M	E	2.3	11	
		M	N	2.3	10	
		△ ~ 4650 km ~ 42°.				
	Sk	iP		23	05	03
		iPP		23	06	49
	Gb	eP		23	05	08
		i		23	05	42
		iPP		23	06	56
	Afghanistan-Tadzhik.					
» 30	Up	iP		23	45	11
		eLg1		00	00	16
				μ	s	
		M	E	0.7	15	
		M	N	0.5	11	
		M	Z	0.7	11	
	Ki	iP		23	44	31
		eLg1		23	57	48
				μ	s	
		M	E	0.6	10	
		M	N	0.4	11	
	Sk	iP		23	45	11
	Lake Baikal, USSR.					
» 31	Up	iP		09	16	56
				μ	s	
		P	Z′	0.1	1.0	
	Ki	iP		09	16	03 C
				μ	s	
		P	Z′	0.1	0.8	
	Sk	iP		09	16	33 C
	Gb	iP		09	17	04
	Aleutian Islands. Magn. = 5.8 (Up, Ki).					
» 31	Ki	e(P)		12	45	25
		i(Sg)		12	45	41
» 31	Ki	iP		12	48	44
» 31	Sk	e(P)		17	38	46
» 31	Ki	i(P)		19	21	26
		i(Sg)		19	21	53

1959						
Sep 1	Up	i(P)		00	44	09
» 1	Up	i(P)		01	11	17
		i		01	11	27
	Ki	iP		01	11	14
	Sk	iP		01	11	34
» 1	Ki	eP		05	48	33
» 1	Up				—	
				μ	s	
		M	E	1.1	19	
		M	N	0.8	20	
		M	Z	0.8	16	
	Ki	iP		07	34	27
				μ	s	
		M	E	0.7	18	
		M	N	0.3	13	
		M	Z	0.7	17	
	Sk	iP		07	33	58
	Mid-Atlantic Ridge.					
» 1	Up	iP		11	00	57
		eS		11	10	03
				μ	s	
		S	N	0.3	6	
		M	E	0.8	17	
		M	Z	1.1	17	
		△ = 7850 km = 70½°.				
	Ki	iP		11	01	01
		i(pP)		11	01	13
		eS		11	10	13
				μ	s	
		S	E	0.3	7	
		S	N	0.4	6	
		M	E	0.4	16	
		M	N	0.3	15	
		△ = 7900 km = 71°.				
	Sk	iP		11	00	41
		i(pP)		11	00	52
	Gb	iP		11	00	39
		iPcP		11	01	04
	Puerto Rico.					
» 1	Up	iP		11	42	04
		i		11	42	13
		iS		11	45	35
		i(Lg2)		11	47	49
				μ	s	
		P	N	6.0	15	
		P	Z	4.4	14	
		P	Z′	0.3	0.6	
		S	E	17	14	
		M	E	33	12	
		M	N	47	16	
		M	Z	41	13	
		△ = 2100 km = 19°.				
	Ki	iP		11	43	21
		iS		11	48	02
		iLg1		11	51	51
		i(ScS)		11	54	24

1959						
Sep 1				μ	s	
(cont.)		P	N	0.7	10	
		P	Z	0.9	11	
		P	Z′	0.3	1.1	
		S	E	4.5	12	
		S	N	3.9	11	
		M	E	43	13	
		M	N	41	12	
		M	Z	57	12	
		△ = 3000 km = 27°.				
	Sk	iP		11	42	48
		i		11	43	02
	Gb	iP		11	41	46
		i		11	41	59
	Albania. Magn. = 5.9 (Up, Ki). Clear channel waves.					
» 1	Ki	e(Sg)		12	21	16
» 1	Up	iP		13	11	24
» 2	Up	iP		08	13	07
		i(pP)		08	13	22
	Ki	iP		08	12	11
		i(pP)		08	12	25
	Sk	eP		08	12	39
		i(pP)		08	12	53
		i		08	13	07
	Alaska. h = 70 km (Up, Ki, Sk).					
» 2	Ki	iP		09	42	53
	Sk	iP		09	42	32
	Puerto Rico.					
» 2	Ki	iP		13	01	47
	Sk	eP		13	02	24
	Gb	eP		13	02	55
	Kamchatka.					
» 2	Sk	i(P)		14	41	09
» 2	Up	iP		15	46	39
» 3	Up	iP		04	06	28
		eS		04	10	08
				μ	s	
		S	E	0.3	7	
		M	E	1.0	17	
		M	N	0.7	12	
		M	Z	1.0	13	
		△ = 2150 km = 19½°.				
	Ki	iP		04	07	46
		e(Lg2)		04	16	41
				μ	s	
		M	E	1.0	14	
		M	N	0.9	14	
		M	Z	1.3	14	
	Sk	iP		04	07	10
	Gb	iP		04	06	13
	Albania.					

1959						
Sep 3	Up	iP		06	41	24
		eSKS		06	51	54
		ePS		06	54	31
				μ	s	
		SKS	E	0.6	6	
		M	E	2.9	17	
		M	N	3.6	23	
		M	Z	4.8	20	
		△ ~ 11150 km ~ 100½°.				
	Ki	iP		06	41	11
		iPP		06	45	18
		iSKS		06	51	49
		eS		06	52	40
				μ	s	
		PP	E	0.4	9	
		PP	Z	0.5	9	
		SKS	E	1.5	9	
		S	N	0.4	9	
		M	E	3.7	23	
		M	N	9.0	24	
		M	Z	4.4	22	
		△ = 11000 km = 99°.				
	Sk	iP		06	41	32
		iPP		06	45	49
	Gb	iP		06	41	45
	Celebes. Magn. = 6.2 (Up, Ki).					
» 3	Ki	iP		07	53	31
		i		07	55	23
	Sk	eP		07	53	22
» 3	Ki	e(Sg)		08	32	56
	Sk	e(Sg)		08	34	31
» 3	Up	iP		18	01	30 C
				μ	s	
		P	Z′	0.1	0.7	
» 3	Ki	eP		19	02	17
» 4	Up	i(P)		00	19	48
				μ	s	
		M	N	0.7	18	
	Ki	e(P)		00	19	38
				μ	s	
		M	N	1.0	18	
		M	Z	0.5	12	
	Sk	eP		00	20	04
	(China).					
» 4	Ki	iP		08	56	07
	Luzon, Philippine Islands.					
» 4	Ki				—	
				μ	s	
		M	E	1.0	15	
		M	N	0.2	13	
	Sk	iP		11	03	38
		i		11	04	32
	Albania.					

1959 Sep 4	Up	i(P)		12	00	22
	Gb	iP		12	00	14
» 4	Sk	iPKP		12	49	46
	Kermadec Islands.					
» 4	Sk	iP		16	21	21
	Albania.					
» 4	Up	iP		17	59	41
	Ki	iP		17	59	11
	Sk	iP		17	59	38
	Mariana Islands (h ~ 250 km).					
» 4	Up	iP		18	37	48
				μ	s	
		P	z′	0.1	0.7	
	Ki	eP		18	38	23
				μ	s	
		P	z′	0.5	2.0	
	Sk	iP		18	37	55C
	Gb	iP		18	37	28
	Atlantic Ocean. Magn. = 6.1 (Up, Ki).					
» 4	Ki	iP		19	32	38
	Aleutian Islands.					
» 5	Up	eL		00	25	
				μ	s	
		M	E	0.6	20	
		M	N	0.4	21	
		M	Z	0.6	19	
	Chile.					
» 5	Up	iP		05	43	23
	Sk	iP		05	43	40
» 5	Up	iP		06	21	29
		iSKS		06	32	11
		iS		06	33	00
				μ	s	
		SKS	E	0.4	5	
		S	N	0.4	6	
		M	E	1.3	19	
		M	N	1.8	18	
		M	Z	3.4	21	
		△ ~ 11100 km ~ 100°.				
	Ki	iP		06	21	09
		i(SKS)		06	31	55
		i(S)		06	32	17
				μ	s	
		P	z′	0.1	1.4	
		(SKS)	E	0.4	8	
		(S)	N	0.4	9	
		M	E	3.0	21	
		M	N	2.2	19	
		M	Z	2.4	20	
	Sk	eP		06	21	31
		i		06	21	38
		ePP		06	25	41

1959 Sep 5 (cont.)	Gb	eP		06	21	58
	Halmahera Island. Magn. = 6.1 (Up, Ki).					
» 5	Up				—	
				μ	s	
		M	E	0.5	18	
		M	N	0.7	22	
		M	Z	0.6	20	
	Ki	ePKP2		07	21	05
				μ	s	
		M	E	0.4	18	
		M	N	0.7	18	
		M	Z	0.9	19	
	Balleny Islands.					
» 5	Up	iP		15	48	36
				μ	s	
		M	E	1.0	20	
		M	N	1.0	20	
		M	Z	1.4	21	
	Ki	iP		15	48	14
		ePS		16	01	01
				μ	s	
		M	E	1.4	21	
		M	N	1.4	20	
		M	Z	1.4	20	
	Halmahera Island.					
» 5	Up	iP		21	23	04
				μ	s	
		P	z′	0.1	1.0	
	Ki	iP		21	22	11
	Sk	iP		21	22	43
	Gb	eP		21	23	28
	Aleutian Islands.					
» 5	Up	iP		21	39	44
				μ	s	
		P	z′	0.1	1.0	
		M	E	0.5	19	
		M	N	0.7	18	
		M	Z	0.7	21	
	Ki	iP		21	38	50C
				μ	s	
		P	z′	0.1	1.0	
		M	E	1.0	18	
		M	N	1.0	17	
		M	Z	1.1	17	
	Sk	iP		21	39	23
	Gb	iP		21	40	07
	Aleutian Islands. Magn. = 5.8 (Up, Ki).					
» 5	Up	iP		21	47	20
	Gb	iP		21	47	44
	(Aleutian Islands).					
» 5	Up	iP		22	04	23
		i		22	05	24
	Ki	iP		22	03	30

1959 Sep 5 (cont.)	Ki	iP		22	04	02
	Gb	iP		22	04	46
	Aleutian Islands.					
» 5	Up	iPKP		23	23	12D
		i		23	23	21
		iSKP		23	26	04
				μ	s	
		SKP	z′	0.1	1.0	
	Ki	iPKP		23	23	08
		iSKP		23	25	39
				μ	s	
		SKP	z′	0.2	1.3	
	Sk	iPKP		23	23	07
		iSKP		23	25	57
	Gb	iPKP		23	23	29
		iSKP		23	26	20
	Fiji Islands (h ~ 550 km).					
» 6	Up	iP		00	41	21D
	Ki	iP		00	41	04
	Sk	iP		00	41	30
	Gb	eP		00	41	39
	Mindanao, Philippine Islands.					
» 6	Up	iP		00	45	14
	Gb	eP		00	46	34
» 6	Up	iP		04	02	08D
	Ki	iP		04	01	15
	Sk	eP		04	01	47
	Gb	eP		04	02	25
	Aleutian Islands.					
» 6	Up	iP		06	37	28C
» 6	Up	iP		13	30	54
		i		13	30	59
	Ki	eP		13	30	37
		i		13	30	45
	Luzon, Philippine Islands.					
» 6	Up	iPKP		18	25	06
	Gb	iPKP		18	25	17
	Fiji Islands.					
» 7	Gb	iP		00	01	47D
» 7	Up	iP		04	14	26
	Sk	iP		04	14	33
	Atlantic Ocean.					
» 8	Up	iP		09	00	13C
		i		09	00	41
				μ	s	
		M	E	0.4	16	
	Ki	iP		09	01	18
	Sk	iP		09	00	52
	Rhodes Island.					

1959 Sep 8	Up	iP		10	14	54C
		ipP		10	15	09
		iPP		10	17	37
				μ	s	
		P	z′	0.2	0.7	
		△ = 7900 km = 71°.				
	Ki	iP		10	14	16C
				μ	s	
		P	z′	0.2	1.0	
	Sk	iP		10	14	49C
	Gb	iP		10	15	13C
	Honshu, Japan. h = 60 km (Up).					
» 8	Sk	iP		11	26	13C
	Lake Baikal.					
» 8	Up	ePS		13	41	17
				μ	s	
		M	N	0.9	23	
		M	Z	1.1	22	
	Ki	iPKP		13	31	05
				μ	s	
		M	N	0.6	19	
		M	Z	1.5	22	
	South Atlantic Ocean.					
» 8	Up	iP		16	17	18
	Kyushu, Japan.					
» 8	Up	iP		19	30	35C
		ipP		19	30	58
				μ	s	
		P	z′	0.1	1.0	
		M	E	1.0	21	
		M	N	0.9	23	
		M	Z	1.2	24	
	Ki	iP		19	29	52
		i		19	31	09
		i(S)		19	38	14
				μ	s	
		(S)	N	0.4	8	
		M	E	1.5	20	
		M	N	0.8	19	
		M	Z	0.8	18	
	Gb	eP		19	30	59
		ipP		19	31	22
	Hokkaido, Japan. h = 90 km (Up, Gb).					
» 8	Up	iPKP		20	37	33
	Ki	iPKP		20	37	49
	Sandwich Islands.					
» 9	Up	iP		02	00	34D
	Ki	iP		01	59	40
	Gb	iP		02	00	54
	Kamchatka.					
» 9	Up	iP		05	52	07
		ePP		05	53	41

1959 Sep 9 (cont.)				μ	s	
		P	z′	0.1	0.8	
	Ki	iP		05	52	16
				μ	s	
		P	z′	0.1	1.0	
	Gb	iP		05	52	28
		iPa		05	55	03
	Hindu Kush (h ~ 200 km). Magn. = 5.7 (Up, Ki).					
» 9	Up	i(Sg)		10	11	05
» 10	Sk	eP		03	59	26
	Rhodes Island.					
» 10	Ki	e		04	20	34
		e(Sg)		04	21	01
» 10	Up	iP		05	41	01
» 10	Gb	iP		09	06	17
» 10	Up	iP		14	04	42
				μ	s	
		P	z′	0.1	0.8	
	Ki	iP		14	05	31 D
				μ	s	
		P	z′	0.2	1.2	
	Gb	eP		14	05	05
	Turkey. Magn. = 5.6 (Up, Ki).					
» 10	Ki	e(P)		15	16	20
» 10	Up	iP		15	54	30
	Kurile Islands.					
» 10	Up	iP		20	44	48
	Ki	iP		20	43	03
» 10	Up	eP		23	07	19
		iPcP		23	07	57
	Ki	iP		23	06	43
				μ	s	
		P	z′	0.1	1.0	
	Gb	eP		23	07	40
	Kurile Islands.					
» 11	Up	iP		10	16	36 D
» 11	Ki	iP		14	25	12 C
	Azores Islands.					
» 12	Up	iP		00	35	16
	Ki	iP		00	35	13
	Java (h ~ 100 km).					
» 12	Up				—	
				μ	s	
		M	E	4.9	23	
		M	N	6.8	25	
		M	Z	4.8	24	

1959 Sep 12 (cont.)	Ki	ePS		02	21	33
				μ	s	
		M	E	6.4	23	
		M	N	3.5	21	
		M	Z	8.9	23	
	Bismarck Sea. Magn. = 6.5 (Up, Ki).					
» 12	Ki	i(P)		04	24	16
» 12	Up	eL		07	50	
				μ	s	
		M	E	1.3	19	
		M	N	0.9	18	
		M	Z	1.9	20	
	Ki	eL		07	52	
				μ	s	
		M	E	1.0	18	
		M	N	0.8	19	
		M	Z	1.2	18	
	Bismarck Sea.					
» 12	Up	iP		08	28	41 D
	Ki	iP		08	27	48
	Aleutian Islands.					
» 12	Up	iP		09	07	38
		i		09	07	43
» 12	Up				—	
				μ	s	
		M	E	1.8	21	
		M	N	1.5	19	
		M	Z	1.6	20	
	Ki	iPKP		11	43	11
				μ	s	
		M	E	1.8	20	
		M	N	1.5	19	
		M	Z	2.9	22	
	Solomon Islands. Magn. = 6.0 (Up, Ki).					
» 12	Up	iP		21	27	26 C
		ipP		21	28	10
		iPP		21	29	10
				μ	s	
		P	z′	0.3	0.5	
		PP	z′	0.1	1.0	
	Ki	iP		21	27	35 C
				μ	s	
		P	z′	0.4	0.5	
		M	E	0.4	11	
	Sk	iP		21	27	52 C
	Gb	iP		21	27	52 C
		iPa		21	30	17
	Hindu Kush. h = 210 km (Up).					
» 13	Up	i(P)		00	51	50
» 13	Up	eP		19	23	35

1959 Sep 13 (cont.)				μ	s	
		M	E	0.4	15	
		M	N	1.3	18	
		M	Z	0.5	16	
	Ki	iP		19	23	35
				μ	s	
		P	z′	0.1	1.0	
		M	E	0.8	13	
		M	N	1.3	12	
		M	Z	1.0	14	
	Sk	eP		19	23	56
		i		19	24	03
	Kirghiz, USSR—China.					
» 13	Up				—	
				μ	s	
		M	E	0.6	20	
		M	N	0.5	22	
		M	Z	0.8	24	
	Ki	iP		22	54	10
				μ	s	
		M	E	0.8	17	
		M	N	0.5	16	
		M	Z	0.6	16	
	Halmahera Island.					
» 14	Up	iP		01	43	57 C
	Ki	iP		01	43	58
	Sk	iP		01	44	12
	Central Asia.					
» 14	Ki	eL		10	07	
				μ	s	
		M	E	0.5	16	
		M	N	0.4	16	
		M	Z	0.8	16	
	Montana, USA.					
» 14	Up	iPKP		13	35	25
		i		13	35	59
	Ki	iPKP		13	35	10
				μ	s	
		M	E	1.6	21	
		M	N	1.8	22	
		M	Z	3.2	22	
	Gb	iPKP		13	35	31
		i		13	35	38
	Tonga Islands.					
» 14	Up	iPKP		14	29	24 C
		iX		14	29	47
		i(PP)		14	32	56
		i		14	33	18
		i(PKKS)		14	40	40
				μ	s	
		PKP	E	7.2	13	
		PKP	N	8.5	10	
		PKP	Z	36	11	
		PKP	z′	0.7	0.7	
		(PP)	z′	0.2	1.1	
		M	E	37	20	

1959 Sep 14 (cont.)		M	N	60	20	
		M	Z	69	23	
	△ ~ 16200 km ~ 146°.					
	Ki	iPKP		14	29	03
		i		14	29	12
		iX		14	29	24
		i!		14	32	21
		iPKS		14	32	36
		i!		14	33	01
		i		14	40	47
		ePS		14	42	35
				μ	s	
		PKP	N	0.9	11	
		PKP	Z	11	10	
		PKP	z′	0.1	1.0	
		M	E	44	18	
		M	N	52	20	
		M	Z	88	20	
	△ ~ 15350 km ~ 138°.					
	Sk	iPKP		14	29	16 C
	Gb	iPKP		14	29	29
		i		14	29	32
		iX		14	29	50
		i		14	40	35
	Kermadec Islands. Magn. = 7.5 (Up, Ki). There are several well pronounced but unidentified phases.					
» 14	Up	iPKP		15	18	25 C
				μ	s	
		PKP	z′	0.1	1.0	
	Ki	iPKP		15	18	10
	Sk	iPKP		15	18	18
	Gb	iPKP		15	18	35 C
	Kermadec Islands.					
» 14	Up	iP		16	08	40 D
	Sk	iP		16	08	29
	Gb	i(P)		16	08	56
» 14	Up	iP		16	15	49
» 14	Up	iPKP		16	41	46
	Sk	iPKP		16	41	38
	Gb	ePKP		16	41	53
	Kermadec Islands.					
» 14	Up	iPKP		17	15	59
	Sk	iPKP		17	15	56
	Gb	ePKP		17	16	07
	Kermadec Islands.					
» 14	Up	iPKP		17	25	59 C
		iPP		17	29	24
		eSS		17	48	09
				μ	s	
		PKP	N	1.8	15	
		PKP	Z	6.1	15	
		PKP	z′	0.5	0.7	
		PP	z′	0.4	2.0	

1959 Sep 14 (cont.)		M	E	3.1	20	
		M	N	4.1	20	
		M	Z	3.9	20	
		△ ~ 16200 km ~ 146°.				
	Ki	iPKP		17	25	42
		iPP		17	28	38
		ePKS		17	29	21
				μ	s	
		PKP	Z	1.6	10	
		PP	N	0.7	9	
		PP	Z	1.4	9	
		PKS	E	1.5	15	
		M	E	3.2	21	
		M	N	4.0	20	
		M	Z	8.1	20	
		△ ~ 15350 km ~ 138°.				
	Sk	iPKP		17	25	51C
		i		17	26	04
	Gb	iPKP		17	26	04
		i		17	26	08
		i		17	26	17
	Kermadec Islands. Magn. = 6.6 (Up, Ki).					
» 14	Up	iP		17	33	26C
		iPcP		17	33	55
				μ	s	
		P	Z′	0.2	0.8	
	Ki	iP		17	32	38
				μ	s	
		P	Z′	0.2	0.9	
	Sk	iP		17	33	14
	Gb	iP		17	33	47
	Kurile Islands. Magn. = 6.2 (Up, Ki).					
» 14	Up	iPKP		17	57	42
	Sk	iPKP		17	57	33D
	Gb	iPKP		17	57	50C
	Kermadec Islands.					
» 14	Up	iP		19	12	08
» 14	Up	iPKP		19	29	23
	Sk	iPKP		19	29	16
	Kermadec Islands.					
» 14	Up	iP		19	34	22
» 14	Sk	iPKP		19	54	41
	Gb	ePKP		19	54	56
	Kermadec Islands.					
» 14	Up	iPKP		20	47	01
	Sk	ePKP		20	46	54
	Gb	ePKP		20	47	05
	Kermadec Islands.					
» 14	Up	iPKP		22	43	37C
		eSKSP		22	57	14
		eSS		23	06	03

1959 Sep 14 (cont.)				μ	s	
		PKP	Z	1.9	10	
		PKP	Z′	0.5	0.8	
		M	E	1.3	20	
		M	N	1.6	20	
		M	Z	2.4	19	
		△ ~ 16200 km ~ 146°.				
	Ki	iPKP		22	43	19
		ePP		22	46	16
		i		22	47	14
		e(PS)		22	56	26
		e(SS)		23	04	39
				μ	s	
		PKP	Z	0.5	9	
		PP	N	0.3	9	
		PP	Z	0.6	9	
		M	E	1.6	20	
		M	N	1.7	20	
		M	Z	3.6	20	
		△ ~ 15350 km ~ 138°.				
	Sk	iPKP		22	43	29C
		i		22	43	39
	Gb	iPKP		22	43	52C
		i		22	44	07
		i		22	44	26
	Kermadec Islands. Magn. = 6.2 (Up, Ki).					
» 14	Up	i(PKP)		23	17	16
	Kermadec Islands.					
» 14	Up	iPKP		23	28	02
	Sk	iPKP		23	27	55
	Kermadec Islands.					
» 15	Up	iPKP		01	50	44
		i		01	50	52
	Sk	iPKP		01	50	36
	Gb	iPKP		01	50	56C
	Kermadec Islands.					
» 15	Up	iPKP		02	43	59
	Sk	iPKP		02	43	51
	Kermadec Islands.					
» 15	Sk	iPKP		04	36	15
	Kermadec Islands.					
» 15	Up	iP		06	08	18
	Ki	iP		06	08	10
» 15	Up	iPKP		06	17	56
				μ	s	
		PKP	Z′	0.1	0.7	
	Sk	iPKP		06	17	48
	Gb	iPKP		06	18	06
	Kermadec Islands.					
» 15	Up	iPKP		06	19	24C
		i		06	19	38
		iPP		06	22	48

1959 Sep 15 (cont.)		e		06	32	45
		iSS		06	41	52
				μ	s	
		PKP	E	2.7	16	
		PKP	N	4.7	14	
		PKP	Z	16	10	
		PKP	Z′	0.4	0.6	
		PP	Z	6.1	9	
		PP	Z′	0.8	2.0	
		M	E	7.7	22	
		M	N	19	20	
		M	Z	18	20	
		△ ~ 16200 km ~ 146°.				
	Ki	iPKP		06	19	05C
		iPP		06	22	01
		iPKS		06	22	46
		iSS		06	40	24
				μ	s	
		PKP	Z	2.2	9	
		PKP	Z′	0.1	1.3	
		PP	N	2.2	8	
		PP	Z	4.6	9	
		PP	Z′	0.6	2.2	
		PKS	E	2.2	9	
		PKS	N	2.2	9	
		M	E	16	20	
		M	N	16	20	
		M	Z	28	20	
		△ ~ 15350 km ~ 138°.				
	Sk	iPKP		06	19	16
	Gb	iPKP		06	19	33
	Kermadec Islands. Magn. = 7.0 (Up, Ki).					
» 15	Up	iPKP		06	23	19
		i		06	23	23
	Sk	iPKP		06	23	08
	Kermadec Islands.					
» 15	Up	iPKP		06	28	19
		i		06	28	26
				μ	s	
		PKP	Z′	0.1	0.6	
	Sk	iPKP		06	28	12
		i		06	28	21
	Gb	iPKP		06	28	31
	Kermadec Islands.					
» 15	Up	iPKP		06	37	14
		i		06	37	18
				μ	s	
		PKP	Z′	0.1	0.6	
	Ki	ePKP		06	36	57
	Sk	iPKP		06	37	05
	Gb	iPKP		06	37	21
	Kermadec Islands.					
» 15	Up	iPKP		07	00	41
		i		07	00	46
	Sk	iPKP		07	00	34
	Gb	iPKP		07	00	52
	Kermadec Islands.					

1959 Sep 15	Up	iP		07	04	21C
» 15	Up	iP		07	57	23
» 15	Up	iPKP		08	20	09C
				μ	s	
		PKP	Z′	0.1	0.6	
	Ki	ePKP		08	19	51
	Sk	iPKP		08	20	01
	Gb	iPKP		08	20	20C
	Kermadec Islands.					
» 15	Up	iP		09	17	25
» 15	Up	iPKP		11	08	26
		i		11	08	34
		i		11	08	44
	Sk	ePKP		11	08	19
	Kermadec Islands.					
» 15	Up	iPKP		11	23	52
		iSKP		11	26	38
		iPP		11	27	01
		iSKKP		11	35	12
		iSS		11	44	26
		esSS		11	48	09
				μ	s	
		PKP	Z′	0.2	0.5	
		SKP	Z	1.6	5	
		SKP	Z′	0.2	1.0	
		PP	N	1.0	3	
		PP	Z	1.6	3	
		SKKP	Z′	0.3	1.4	
		M	E	0.9	23	
		M	N	1.4	26	
		M	Z	1.9	20	
		△ ~ 15550 km ~ 140°.				
	Ki	i(PKP)		11	23	32
		iPKP		11	23	44
		iSKP		11	26	15
		i		11	30	32
		i		11	32	10
				μ	s	
		PKP	Z′	0.2	1.0	
		SKP	N	0.9	7	
		SKP	Z	4.4	6	
		SKP	Z′	1.3	1.5	
		△ ~ 14650 km ~ 132°.				
	Sk	iPKP		11	23	44
		i		11	23	54
		iSKP		11	26	32
	Gb	iPKP		11	24	01D
		iSKP		11	26	48
		iSKKP		11	35	00
	Fiji Islands (h ~ 600 km). Magn. = 7.1 (Up).					
» 15	Up	iPKP		12	20	05
		i		12	20	13
	Sk	iPKP		12	19	57
		i		12	20	08

1959 Sep 15 (cont.)	Gb	iPKP	12	20	13
	Kermadec Islands.				
» 15	Up	iPKP	12	28	46
	Sk	iPKP	12	28	40
	Gb	ePKP	12	28	53
	Kermadec Islands.				
» 15	Gb	iPKP	13	13	52 D
	Tonga Islands.				
» 15	Up	iPKP	13	35	07
	Sk	iPKP	13	34	59
	Gb	ePKP	13	35	15
	Kermadec Islands.				
» 15	Up	iP	13	49	12
			μ	s	
		P z′	0.1	0.6	
	Ki	iP	13	48	19
	Aleutian Islands.				
» 15	Up	iPKP	14	06	03 C
		i	14	06	15
			μ	s	
		PKP z′	0.2	0.8	
	Ki	ePKP	14	05	44
	Sk	iPKP	14	05	55 C
		i	14	06	08
	Gb	iPKP	14	06	09
	Kermadec Islands.				
» 15	Up	iPKP	14	23	24
			μ	s	
		PKP z′	0.1	0.8	
	Sk	iPKP	14	23	16 D
		i	14	23	29
	Gb	iPKP	14	23	31
	Kermadec Islands.				
» 15	Up	ePKP	15	08	10
	Sk	ePKP	15	07	53
	Kermadec Islands.				
» 15	Up	iP	15	19	25 C
			μ	s	
		P z′	0.2	0.8	
	Ki	iP	15	18	38
			μ	s	
		P z′	0.1	1.0	
	Sk	iP	15	19	15 C
	Gb	iP	15	19	46 C
	Hokkaido, Japan (h ~ 100 km). Magn. = = 6.0 (Up, Ki).				
» 15	Up	iPKP	22	54	31
	Sk	ePKP	22	54	19
	Kermadec Islands.				
» 16	Sk	iPKP	01	48	18
	Kermadec Islands.				

1959 Sep 16	Up	iPKP	02	23	21
	Sk	iPKP	02	23	11
	Kermadec Islands.				
» 16	Up	iPKP	02	55	45
		i	02	55	47
		i	02	55	57
			μ	s	
		PKP z′	0.1	0.6	
	Sk	iPKP	02	55	37
	Gb	e(PKP)	02	56	00
	Kermadec Islands.				
» 16	Up	iP	03	36	58 C
» 16	Up	iP	05	19	18
			μ	s	
		P z′	0.7	0.8	
	Ki	iP	05	20	25 C
			μ	s	
		P z′	0.9	0.7	
	Sk	iP	05	19	57 C
	Gb	iP	05	19	11 C
	Crete. Magn. = 6.5 (Up, Ki).				
» 16	Sk	iPKP	08	40	06
	Kermadec Islands.				
» 16	Up	iPKP	10	27	35
			μ	s	
		PKP z′	0.1	0.8	
	Sk	iPKP	10	27	24
	Kermadec Islands.				
» 16	Up	iPKP	16	16	48
		eSS	16	39	17
			μ	s	
		PKP z	0.8	5	
		PKP z′	0.1	0.6	
		M N	2.9	19	
		M Z	2.7	19	
	Ki	eSS	16	37	48
			μ	s	
		M E	1.5	17	
		M N	2.3	20	
		M Z	3.3	20	
	Sk	iPKP	16	16	40
	Gb	iPKP	16	17	02 C
	Kermadec Islands. Magn. = 6.2 (Up, Ki).				
» 17	Sk	iPKP	03	59	11
	Kermadec Islands.				
» 17	Sk	iPKP	04	23	38
	Kermadec Islands.				
» 17	Up	iPKP	05	48	20
	Sk	ePKP	05	47	59
	Kermadec Islands.				

1959 Sep 17	Up	iPKP	07	30	16
		i	07	30	28
			μ	s	
		PKP z′	0.1	0.9	
	Sk	iPKP	07	30	06 D
		i	07	30	15
	Gb	iPKP	07	30	34
	Kermadec Islands.				
» 17	Up	iPKP	08	58	56
	Sk	iPKP	08	58	54
	Kermadec Islands.				
» 17	Sk	iPKP	10	57	23
	Kermadec Islands.				
» 17	Up	iPKP	14	27	39
	Sk	iPKP	14	27	32
		i	14	27	44
	Gb	iPKP	14	27	53 C
		i	14	28	06
	Kermadec Islands.				
» 17	Up	iPKP	14	55	56
		i	14	56	09
		i	14	56	16
		eSS	15	18	19
			μ	s	
		PKP Z	0.6	4	
		M E	0.9	19	
		M N	1.0	20	
		M Z	1.6	20	
	Ki	iPKP	14	55	37
		e(SS)	15	17	00
			μ	s	
		M E	0.8	17	
		M N	0.9	19	
		M Z	1.2	20	
	Sk	iPKP	14	55	48 C
	Gb	iPKP	14	56	11 C
	Kermadec Islands. Magn. = 5.8 (Up, Ki).				
» 17	Up	iPKP	15	11	26
	Sk	iPKP	15	11	18
		i	15	11	28
	Kermadec Islands.				
» 17	Sk	iPKP	17	32	56
		i	17	33	07
	Gb	iPKP	17	33	23
		i	17	33	33
	Kermadec Islands.				
» 17	Ki	iP	21	36	57
		ipP	21	37	12
			μ	s	
		P z′	0.1	1.5	
	Sk	iP	21	36	48
		i	21	37	10
	El Salvador. h = 60 km (Ki).				

1959 Sep 17	Ki	iP	21	55	54
	Mediterranean Sea, north of Spanish Morocco.				
» 17	Ki	iP	22	26	33
	Gulf of California.				
» 18	Up	e(Lgl)	02	19	29
	Ki			—	
			μ	s	
		M E	1.2	16	
		M N	0.4	15	
	Mediterranean Sea, north of Spanish Morocco.				
» 18	Sk	iPKP	03	24	21
	Kermadec Islands.				
» 18	Up	iPKP	09	44	21
	Sk	iPKP	09	44	13 C
	Kermadec Islands.				
» 18	Gb	iPKP	11	03	13
	Kermadec Islands.				
» 18	Up	iPKP	12	20	06
		i	12	20	19
			μ	s	
		M E	1.3	20	
		M N	1.8	20	
		M Z	1.7	21	
	Ki	iPKP	12	20	22
			μ	s	
		PKP z′	0.4	1.5	
		M E	0.9	20	
		M N	1.0	19	
		M Z	1.2	18	
	Sk	iPKP	12	20	11
	Sandwich Islands. Magn. = 5.8 (Up, Ki).				
» 18	Ki	i(P)	15	59	50
» 19	Up	iP	04	22	25 C
			μ	s	
		P z′	0.1	1.0	
	Ki	iP	04	21	45 C
	Honshu, Japan (h ~ 60 km).				
» 19	Ki	iP	16	10	13
	Persian Gulf.				
» 19	Up	ePKP	19	51	20
		i	19	51	25
	Kermadec Islands.				
» 20	Ki	e(Sg)	07	27	25
» 21	Up	iP	05	39	29

1959
Sep 21 Up eP 12 27 09
Ki iP 12 27 10
Sk iP 12 27 34
Kirghiz, USSR—China.

» 21 Ki eP 16 25 18
Alaska.

» 21 Up iP 16 45 10

» 22 Ki iP 07 56 06
Aleutian Islands.

» 22 Ki e(Sg) 18 14 31
Sk i(Sg) 18 15 40

» 23 Ki e(P) 07 20 34

» 23 Ki eP 10 44 10
eS 10 48 27

		μ	s
S	E	0.6	7
S	N	0.6	11
M	N	0.5	14

△=2650 km=24°.
Sk eP 10 45 02
Arctic Ocean.

» 23 Up iP 20 33 22

» 23 Up —

		μ	s
M	E	1.3	19
M	N	1.3	19

Ki iP 22 34 07

		μ	s
M	E	1.1	15
M	N	1.8	18
M	Z	1.6	16

Sk iP 22 34 37
Honshu, Japan.

» 24 Ki iP 05 48 47
i 05 48 55

		μ	s
P	z′	1.3	1.9

Sk eP 05 49 35
i 05 49 40
Arctic Ocean.

» 24 Ki eP 10 55 42
Mid-Atlantic Ridge.

» 24 Up iPKP 19 12 59
Kermadec Islands.

» 24 Sk ePKP 20 04 07
Kermadec Islands.

» 25 Up iPKP 01 58 56
i 01 59 04

1959
Sep 25 Sk iPKP 01 58 45
(cont.) i 01 58 57
Gb ePKP 01 58 58
Kermadec Islands.

» 25 Up iP 02 48 47C
iPP 02 51 50
iS 02 58 35

		μ	s
P	E	4.4	14
P	Z	5.3	10
P	z′	1.1	0.8
S	E	5.1	16
S	N	4.9	10
M	E	34	19
M	N	30	16
M	Z	50	18

△=8650 km=78°.
Ki iP 02 48 25C
iS 02 57 51
i! 02 58 48
i(Lg2) 03 17 23

		μ	s
P	E	2.4	13
P	Z	4.3	10
P	z′	1.2	1.0
S	E	10	14
S	N	2.5	10
M	E	32	15
M	N	32	18
M	Z	35	16

△=8300 km=74 ½°.
Sk iP 02 48 51C
i 02 49 17
Gb iP 02 49 01C
i(PP) 02 51 47
Formosa. Magn.=6.8 (Up, Ki).

» 25 Up iP 07 23 17D
i 07 23 22

		μ	s
P	z′	0.1	0.5

Ki iP 07 24 09
Sk eP 07 24 02
i 07 24 09
iSn 07 28 44
iLi 07 30 56
Gb iP 07 23 29D
iPP 07 23 54
eS 07 27 34
Caucasus, USSR. The group velocity (epicenter to Skalstugan) of Sn is 4.58 km/sec. Sn has been observed repeatedly even for such large distances as here, around 25°, for paths traversing the Russian platform.

» 25 Up iPKP 23 54 40
Sk ePKP 23 54 32
Kermadec Islands.

1959
Sep 26 Up iPKP 01 38 45
Sk iPKP 01 38 27
Kermadec Islands.

» 26 Up iP 04 05 32
Sk iP 04 06 12
Greece.

» 26 Up iPKP 04 16 05
Sk iPKP 04 15 59
Kermadec Islands.

» 26 Up iP 08 32 26C
i 08 32 31
iS 08 41 54

		μ	s
P	z′	0.1	0.9
M	E	3.4	20
M	N	5.9	20
M	Z	5.8	21

△=8150 km=73 ½°.
Ki iP 08 31 47
i 08 31 52
eS 08 40 39

		μ	s
P	z′	0.5	1.6
S	E	1.3	10
S	N	1.3	9
M	E	4.8	18
M	N	4.0	17
M	Z	8.8	17

△=7500 km=67 ½°.
Sk iP 08 31 58C
i 08 32 03
Gb iP 08 32 32
Oregon. Magn.=6.1 (Up, Ki).

» 26 Up iPg 10 07 59
iSg 10 08 20
iL 10 08 30
△=180 km=1.6°.
Sk eSg 10 09 15
△=370 km=3.3°.
Presumably explosion in the Baltic, 61 ½°N, 17 ½°E. Origin time=10 07 27.

» 26 Ki eP 12 39 07
Greenland.

» 26 Up i(P) 16 05 10

» 26 Ki iP 20 02 40
Persian Gulf.

» 27 Ki iP 10 34 19C
Banda Sea.

» 27 Up iP 12 48 24
Ki iP 12 48 35

1959
Sep 28 Up iP 01 16 21
Ki iP 01 14 42
iS 01 17 15
△=1550 km=14°.
Sk iP 01 15 42
iPP 01 15 56
e(S) 01 19 32
△=2050 km=18 ½°.
Svalbard region.

» 28 Up iP 04 32 23
i(pP) 04 32 34

		μ	s
M	E	2.1	15
M	N	0.9	18
M	Z	2.4	15

Ki iP 04 31 54C
i(pP) 04 32 04

		μ	s
M	E	0.9	13
M	N	0.6	14
M	Z	0.8	14

Sk eP 04 32 24
i(pP) 04 32 34
Gb eP 04 32 43
Okinawa Islands.

» 28 Up iP 08 48 28
Ki iP 08 47 46
Hokkaido, Japan (h ~ 60 km).

» 28 Ki iP 09 20 51

» 28 Up iP 10 21 41
i 10 21 53

		μ	s
P	z′	0.1	0.8

Ki iP 10 22 43
i 10 22 53
Sk iP 10 22 21
Gb iP 10 21 37
Turkey.

» 29 Up iP 02 59 58
Ki iP 02 59 44
Sk iP 03 00 11

» 29 Up iPg 13 25 30
iSg 13 25 46

		μ	s
Sg	z′	0.2	0.5

△=130 km=1.2°.
Ki e(Sg) 13 29 19
Sk eSg 13 28 03
△=600 km=5.4°.
Baltic, 59¾°N, 20°E. Origin time= =13 25 06. Explosion?

» 29 Up iPKP 15 51 43C
i 15 51 46

1959						
Sep 29		i		15	52	00
(cont.)		iSS		16	14	12
				μ	s	
		PKP	z	1.6	7	
		PKP	z′	0.1	0.5	
		M	E	4.4	20	
		M	N	5.7	20	
		M	z	6.1	19	
		△ ~ 16200 km ~ 146°.				
	Ki	ePKP		15	51	22
		ePP		15	54	28
		iSS		16	12	43
				μ	s	
		PP	N	0.7	10	
		M	E	4.5	18	
		M	N	5.1	20	
		M	z	7.2	20	
		△ ~ 15350 km ~ 138°.				
	Sk	iPKP		15	51	34
	Gb	ePKP		15	51	48
		i		15	51	52
	Kermadec Islands. Magn. = 6.5 (Up, Ki).					
» 29	Up	iPKP		16	01	09
	Sk	iPKP		16	00	58
		i		16	01	17
	Gb	iPKP		16	01	13
		iPKP2		16	01	34
	Kermadec Islands.					
» 29	Up	iPKP		16	33	37
	Sk	iPKP		16	33	30
	Kermadec Islands.					
» 29	Up	iPKP		17	27	33
	Sk	iPKP		17	27	25
	Kermadec Islands.					
» 29	Up	iPKP		17	58	05
		i		17	58	24
	Sk	iPKP		17	57	54
		i		17	57	59
	Kermadec Islands.					
» 30	Up	eP		03	42	00
		i		03	42	13
	Ki	iP		03	41	32
	Sk	eP		03	42	06
	Gb	iP		03	42	35
	Ryukyu Islands.					
» 30	Ki	iP		04	58	14
	Sumatra.					
» 30	Up	iPKP		05	16	05
	Sk	iPKP		05	15	58C
	Gb	e(PKP2)		05	16	26
	Kermadec Islands.					

1959						
Sep 30	Up	i(P)		10	31	25
	Ki	iP		10	32	07
	Sk	iP		10	32	03
	Gb	e(P)		10	31	35
» 30	Up	iPKP		13	51	15
		i		13	51	28
				μ	s	
		PKP	z′	0.1	1.0	
	Sk	iPKP		13	51	08D
	Kermadec Islands.					
» 30	Up	iPKP		15	13	12
	Sk	iPKP		15	13	01
	Kermadec Islands.					
» 30	Up	ePKP		16	50	11
	Sk	iPKP		16	50	02
	Kermadec Islands.					
» 30	Up			—		
				μ	s	
		M	E	0.6	13	
		M	N	0.8	13	
	Ki	iP		17	04	30
				μ	s	
		M	E	1.0	14	
		M	N	0.4	14	
		M	z	0.6	11	
	Mediterranean Sea, north of Spanish Morocco.					
» 30	Up	iPKP		20	45	19
				μ	s	
		M	E	1.2	21	
		M	N	3.0	24	
		M	z	2.0	21	
	Ki	iPKP		20	45	03
				μ	s	
		PKP	z′	0.2	1.0	
		M	E	2.7	22	
		M	N	1.4	20	
		M	z	2.6	21	
	Sk	iPKP		20	45	13
	Gb	ePKP		20	45	19
		i		20	45	30
	New Hebrides Islands. Magn. = 6.2 (Up, Ki).					
Oct 1	Up	iP		04	42	49
				μ	s	
		M	E	0.6	14	
	Ki	iP		04	44	05
	Sk	iP		04	43	29
	Gb	iP		04	42	40
	Greece.					
» 1	Up	iP		07	29	47

1959						
Oct 1	Up	iP		16	08	12
		i		16	08	24
		iS		16	10	48
				μ	s	
		P	z′	0.1	0.5	
		S	z′	0.1	0.5	
		△ = 1650 km = 15°.				
	Ki	iP		16	09	40
		iS		16	13	40
		△ = 2450 km = 22°.				
	Sk	iP		16	09	11
		iS		16	12	37
		i		16	12	49
	Gb	eP		16	08	20
		iS		16	10	51
	Rumania (h ~ 160 km).					
» 1	Gb	iPg		17	16	21
		iSg		17	16	22
	Local blast?					
» 2	Ki	eP		12	43	48
» 2	Up	i(P)		20	16	38
» 3	Up	iP		16	08	07
	Sk	iP		16	08	04
» 3	Up	iP		20	13	54
		iPcP		20	14	18
	Ki	iP		20	13	09
	Sk	eP		20	13	44
	Gb	eP		20	14	17
	Hokkaido, Japan.					
» 4	Ki	iP		16	32	31
	Arctic Ocean.					
» 5	Sk	iP		10	24	30
	Italy.					
» 5	Up	iP		11	45	03
	Ki	iP		11	44	10
	Aleutian Islands.					
» 5	Ki	iP		18	01	35
		i		18	01	51
		eS		18	05	48
		e		18	13	47
				μ	s	
		P	z′	0.8	2.0	
		S	N	0.9	11	
		M	E	1.2	18	
		M	N	0.6	17	
		M	z	1.0	15	
		△ = 2600 km = 23½°.				
	Gb	iP		18	03	05
	Arctic Ocean.					
» 5	Ki	iP		18	16	38

1959						
Oct 5				μ	s	
(cont.)		P	z′	0.8	2.0	
	Sk	eP		18	17	20
	Gb	iP		18	18	08C
	Arctic Ocean.					
» 5	Up	iP		18	34	10
		iS		18	39	14
				μ	s	
		P	z	0.5	5	
		M	E	4.4	20	
		M	N	5.4	19	
		M	z	4.7	22	
		△ = 3500 km = 31½°.				
	Ki	iP		18	33	01
		i		18	33	20
		iS		18	37	16
		i		18	45	04
				μ	s	
		P	N	3.3	6	
		P	z	3.0	6	
		P	z′	1.7	2.5	
		S	E	4.6	11	
		S	N	5.9	12	
		M	E	8.6	19	
		M	N	4.2	18	
		M	z	5.4	18	
		△ = 2650 km = 24°.				
	Sk	eP		18	33	45
	Gb	eP		18	34	29
	Arctic Ocean. Magn. = 5.9 (Up, Ki).					
» 5	Ki	eP		20	33	20
	Arctic Ocean.					
» 5	Up	iP		20	38	28D
		iS		20	42	00
		i		20	42	12
				μ	s	
		P	N	0.6	5	
		P	z′	0.1	0.5	
		S	E	1.2	13	
		M	E	5.4	14	
		M	N	3.7	11	
		M	z	4.1	11	
		△ = 2100 km = 19°.				
	Ki	iP		20	39	47
				μ	s	
		M	E	6.2	13	
		M	N	4.0	12	
		M	z	5.3	13	
	Sk	iP		20	39	11D
	Gb	iP		20	38	05
		i		20	38	15
	Albania. Magn. = 5.5 (Up).					
» 6	Up	iP		10	41	05
	Sk	iP		10	41	40
	Greece.					
» 7	Up	iP		08	35	02C
		iS		08	38	40

1959 Oct 7 (cont.)		P	N	0.8	3	
		P	Z′	0.3	0.6	
		S	E	2.2	6	
		S	N	1.2	8	
		M	E	13	13	
		M	N	13	16	
		M	Z	12	16	
		△=2100 km=19°.				
	Ki	iP		08	36	23C
		i		08	36	37
		iS		08	41	10
				μ	s	
		P	Z′	0.4	1.4	
		S	E	1.0	12	
		S	N	1.0	11	
		M	E	12	12	
		M	N	13	12	
		M	Z	16	12	
		△=3000 km=27°.				
	Sk	iP		08	35	47C
	Gb	iP		08	34	47
		i		08	34	58
		i		08	35	00
	Albania. Magn.=5.9 (Up, Ki).					
» 7	Sk	iP		09	39	59
	Albania.					
» 7	Up	iP		13	10	01
				μ	s	
		P	Z′	0.1	0.7	
	Ki	iP		13	10	01
	Sk	eP		13	10	22
	Gb	eP		13	10	24
	Kashmir-Tibet.					
7	Ki	eP		21	05	46
» 7	Ki	iPg		21	16	55
		eSg		21	17	16
		eL		21	17	21
		△=180 km=1.6°.				
	Blast?					
» 7	Sk	eP		21	24	05
	Albania.					
» 7	Ki	i(Sg)		21	42	59
» 8	Ki	iPKP		00	22	36
	Sk	iPKP		00	22	42
		i		00	23	01
	Gb	ePKP		00	22	57
	New Hebrides Islands.					
» 8	Up	iP		02	46	23
				μ	s	
		P	Z′	0.2	1.0	
	Ki	iP		02	45	29C

1959 Oct 8 (cont.)		P	Z′	0.4	1.0	
	Sk	iP		02	46	00
	Gb	iP		02	46	37
	Aleutian Islands.					
» 8	Up	e(P)		06	00	26
» 8	Sk	eP		07	25	58
	Albania.					
» 8	Ki	iP		11	06	27C
	Sk	iP		11	06	34
		i		11	06	50
» 8	Up	eP		14	22	43
	Ki	eP		14	22	04
	Sk	eP		14	22	39
	Lake Baikal, USSR.					
» 8	Up	iP		20	08	52
	Ki	eP		20	08	28
		e		20	08	48
» 9	Up	eP		03	37	29
	Ki	eP		03	38	03
	Sk	eP		03	37	59
	Iran.					
» 9	Up	iPg		08	24	01
		i		08	24	04
		iS*		08	24	42
		iSg		08	24	47
		△=390 km=3.5°.				
	Ki	i(Sg)		08	28	27
	Sk	eSg		08	27	00
	Near coast of the Baltic States. Explosion?					
» 9	Up	iPg		13	51	17
		i		13	51	19
		iSg		13	52	02
		△=390 km=3.5°.				
	Sk	eSg		13	54	17
	Near coast of the Baltic States. Explosion?					
» 9	Up	i(Sg)		14	51	07
		i		14	51	12
	Sk	eSg		14	53	03
» 9	Sk	iP		17	11	22
» 9	Up	iP		22	46	48
» 10	Up	i(P)		00	48	02
» 10	Sk	eP		16	16	04
	Albania.					
» 10	Up	iP		16	50	10D
	Sk	iP		16	50	07

1959 Oct 10	Up	iP		19	07	14
» 10	Ki	iP		20	11	08
» 11	Up	iP		09	44	54C
		i(pP)		09	45	12
				μ	s	
		P	Z′	0.1	1.0	
	Ki	iP		09	44	12
				μ	s	
		P	Z′	0.1	1.2	
	Sk	iP		09	44	46C
	Honshu, Japan. Magn.=5.7 (Up, Ki).					
» 11	Up	iSn		10	31	07
		iSg		10	31	44
		△=690 km=6.2°.				
	Ki	eSn		10	31	41
		e(S*)		10	32	15
		iSg		10	32	32
		△=840 km=7.6°.				
	Sk	eSg		10	32	50
		△=910 km=8.2°.				
	Finland-USSR, 61½°N, 29½°E. Origin time=10 28 19.					
» 11	Up	iPKP		18	10	08
		i		18	10	19
	Kermadec Islands.					
» 11	Up	iPKP		20	23	10
				μ	s	
		PKP	Z′	0.1	1.0	
	Sk	iPKP		20	23	02
	Kermadec Islands.					
» 11	Sk	eP		21	52	44
	Guatemala.					
» 12	Sk	iP		01	16	38
	Mid-Atlantic Ridge.					
» 12	Up	eP		01	46	43
		i		01	46	46
	Ki	iP		01	46	51
	Sk	iP		01	47	10
	Pamir.					
» 12	Up	iP		03	34	22C
		iS		03	44	34
				μ	s	
		P	Z′	0.1	0.5	
		S	E	0.3	5	
		S	N	0.7	5	
		M	E	1.9	20	
		M	N	1.6	20	
		M	Z	1.9	20	
		△=9200 km=83°.				
	Ki	iP		03	34	23C
		iS		03	44	39

1959 Oct 12 (cont.)		P	Z	1.4	6	
		P	Z′	0.4	1.0	
		S	E	0.7	9	
		S	N	1.1	9	
		M	E	4.0	20	
		M	N	1.5	19	
		M	Z	4.8	20	
		△=9250 km=83½°.				
	Sk	iP		03	34	37C
		i		03	34	52
	Sumatra. Magn.=6.3 (Up, Ki).					
» 12	Up	iP		08	49	47
	Ki	iP		08	49	30
	Sk	iP		08	49	53
	Mindanao, Philippine Islands.					
» 12	Up	iP		10	10	20
	Honshu, Japan.					
» 12	Sk	ePKP		10	34	52
	Kermadec Islands.					
» 12	Up	iP		16	18	08
» 12	Up	iP		16	46	35D
		iS		16	49	17
	Sk	e(S)		16	51	19
		iLgl		16	53	28
	Rumania. Probably intermediate depth.					
» 12	Up	iP		19	36	29
				μ	s	
		M	N	0.5	17	
	Ki	iP		19	36	37
				μ	s	
		M	E	0.3	15	
		M	N	0.6	13	
	Sk	iP		19	36	49
	India.					
» 12	Up	i(P)		20	24	56
» 12	Up	iP		21	40	17
» 13	Up	iPg		10	25	26
		i		10	25	29
		iS*		10	26	08
		iSg		10	26	13
		△=400 km=3.6°.				
	Sk	eSg		10	28	25
	Near coast of the Baltic States. Explosion?					
» 13	Up	i(S*)		11	26	42
		iSg		11	27	01
		△=610 km=5.5°.				
	Ki	iSn		11	26	55
		iSg		11	27	33

1959 Oct 13 (cont.)			△=710 km=6.4°.			
	Sk	eSg		11	28	00
			△=800 km=7.2°.			
	Finland, 62.3°N, 27.6°E. Origin time= =11 24 01.					
» 13	Sk	i(P)		12	25	21
» 13	Up	iPg		13	32	27
		iS*		13	33	07
		iSg		13	33	13
			△=390 km=3.5°.			
	Sk	iSg		13	35	30
	Near coast of the Baltic States. Explosion?					
» 14	Up	iP		10	08	23
	Ki	iP		10	07	55
	Sk	iP		10	08	24
	Ryukyu Islands.					
» 15	Up	iP		06	29	04
		i		06	29	08
		iPP		06	33	01
		iSKS		06	39	36
		iS		06	40	17
				μ	s	
		P	Z	1.0	4	
		P	Z′	2.0	3.0	
		PP	E	1.5	8	
		PP	Z	3.1	9	
		SKS	E	3.2	7	
		S	N	5.4	18	
		M	E	17	18	
		M	N	40	22	
		M	Z	20	23	
			△=10700 km=96½°.			
	Ki	iP		06	28	52C
		iPP		06	32	40
		iSKS		06	39	21
				μ	s	
		P	Z	2.2	5	
		P	Z′	4.3	3.0	
		PP	Z′	0.6	2.0	
		SKS	E	4.9	7	
		M	E	30	21	
		M	N	25	19	
		M	Z	32	21	
			△=10400 km=93½°.			
	Sk	iP		06	29	08
		iPP		06	33	11
	Gb	iP		06	29	13C
		iPP		06	33	22
	Celebes. Magn.=6.8 (Up, Ki). P(Z′) has a remarkably long period.					
» 15	Up	iPg		07	33	54
		i		07	33	57
		iSg		07	34	40
			△=390 km=3.5°.			

1959 Oct 15 (cont.)	Near coast of the Baltic States. Explosion?					
» 15	Up	iP		07	51	29
				μ	s	
		P	Z′	0.3	0.5	
	Ki	iP		07	50	43
				μ	s	
		P	Z′	0.1	1.0	
	Sk	iP		07	51	20
	Gb	iP		07	51	49C
	Kurile Islands. Magn.=6.2 (Up, Ki).					
» 15	Up	iPg		11	11	35
		i		11	11	38
		iS*		11	12	15
		iSg		11	12	21
			△=390 km=3.5°.			
	Near coast of the Baltic States. Explosion?					
» 15	Ki	e(Sg)		12	47	34
» 15	Ki	iPKP		14	13	11
	Sandwich Islands.					
» 15	Up	iPg		14	56	07
		i		14	56	10
		iS*		14	56	48
		iSg		14	56	54
			△=400 km=3.6°.			
	Near coast of the Baltic States. Explosion?					
» 15	Up	iPg		17	16	22
		i		17	16	24
		iS*		17	17	01
		iSg		17	17	08
			△=390 km=3.5°.			
	Near coast of the Baltic States. Explosion?					
» 15	Ki	iP		20	43	57
	Aleutian Islands.					
» 16	Up	iP		03	37	27
	Ki	iP		03	37	53
» 16	Ki	iP		08	23	25
	Alaska.					
» 17	Up	iP		02	43	54C
	Ki	iP		02	43	01
	Aleutian Islands.					
» 17	Ki	iP		07	32	27
	Vladivostok, USSR.					
» 17	Up	iPg		10	45	48
		i		10	45	50

1959 Oct 17 (cont.)		iS*		10	46	27
		iSg		10	46	34
			△=390 km=3.5°.			
	Near coast of the Baltic States. Explosion?					
» 17	Up	iP		10	55	34
	Ki	eP		10	55	33
	Kashmir-China.					
» 17	Up	iP		12	54	52C
				μ	s	
		P	Z′	0.1	0.5	
» 17	Up	iPg		13	40	48
		iS*		13	41	28
		iSg		13	41	34
				μ	s	
		Sg	Z′	0.1	0.5	
			△=390 km=3.5°.			
	Sk	iSg		13	43	51
	Near coast of the Baltic States. Explosion?					
» 17	Up	iP		20	37	35C
	Ki	iP		20	36	41
	Sk	iP		20	37	06
	Yukon-British Columbia.					
» 18	Up	iP		07	35	28
» 18	Up	iPKP		12	36	47C
		iPKP2		12	37	00
	Kermadec Islands.					
» 18	Up	iPg		12	44	22
		i		12	44	25
		iS*		12	45	03
		iSg		12	45	09
			△=400 km=3.6°			
	Ki	eSg		12	49	03
	Sk	eSg		12	47	32
	Near coast of the Baltic States. Explosion?					
» 18	Up	iP*		15	14	23
		iPg		15	14	29
		iS*		15	15	09
		iSg		15	15	15
				μ	s	
		Sg	Z′	0.1	0.5	
			△=390 km=3.5°.			
	Ki	e(S*)		15	18	23
		eSg		15	19	02
	Sk	eSg		15	17	28
			△=830 km=7.5°.			
	Near coast of the Baltic States. Origin time=15 13 20. Explosion?					

1959 Oct 18	Up	iP		17	16	59
		i		17	17	10
		iPcP		17	17	33
	Ki	iP		17	16	17
	Sk	iP		17	16	44
	Gb	iP		17	17	19C
	Kamchatka.					
» 18	Ki	iP		19	48	55
	Mid-Atlantic Ridge.					
» 18	Up	iP		23	38	19
	Ki	iP		23	38	18D
	Sunda Strait (h ~ 150 km).					
» 19	Up	iPKP		01	45	20
		i		01	45	24
	Sk	iPKP		01	45	14
	Kermadec Islands (h ~ 60 km).					
» 19	Up	iPKP		02	32	26
				μ	s	
		PKP	Z′	0.2	0.6	
	Ki	ePKP		02	32	14
	Gb	iPKP		02	32	37
	South of Fiji Islands.					
» 19	Up	iP		02	57	54C
				μ	s	
		P	Z′	0.5	0.6	
	Ki	iP		02	57	09
		i		02	57	17
				μ	s	
		P	Z′	0.4	0.8	
	Sk	iP		02	57	44
	Gb	iP		02	58	17C
	Kurile Islands. Magn.=6.6 (Up, Ki).					
» 19	Up	iPKP		08	47	03
		eSS		09	09	27
				μ	s	
		PKP	N	0.5	5	
		PKP	Z	2.0	7	
		PKP	Z′	0.2	1.0	
		M	E	1.1	19	
		M	N	1.4	20	
		M	Z	1.6	20	
	Ki	ePKP		08	46	48
		ePP		08	49	35
		ePKS		08	50	17
		e(SS)		09	08	02
				μ	s	
		PKP	Z	0.4	9	
		PP	Z	0.6	9	
		PKS	N	0.5	9	
		M	E	1.0	18	
		M	N	1.3	19	
		M	Z	2.4	20	
			△ ~ 15400 km ~ 138½°.			
	Sk	iPKP		08	46	55

1959
Oct 19 (cont.)

Gb	iPKP		08	47	14
	i		08	47	57

Kermadec Islands. Magn. = 5.9 (Up, Ki).

» 19	Up	iPKP		09	35	03
	Sk	iPKP		09	34	57
		i		09	35	07
	Gb	iPKP		09	35	14

Kermadec Islands.

» 19	Up	iPKP		14	10	58
	Ki	iPKP		14	10	51
	Gb	iPKP		14	11	08 D

Fiji Islands (h ~ 600 km).

» 19	Up	iPKP		16	14	22
		iPKKP		16	24	34
		eSKSP		16	25	34
				μ	s	
		SKSP	E	2.5	19	
		SKSP	N	5.3	20	
		SKSP	Z	1.7	18	
		M	E	4.5	22	
		M	N	7.7	21	
		M	Z	5.5	21	
	Ki	iPKP		16	14	38 C
		ePP		16	16	38
		e(PPS)		16	28	11
				μ	s	
		PKP	Z	1.0	4	
		PKP	Z′	0.3	1.2	
		M	E	3.7	20	
		M	N	3.8	19	
		M	Z	6.2	19	
	Sk	iPKP		16	14	28

Sandwich Islands. Magn. = 6.4 (Up, Ki).

» 19	Ki	iP		18	21	17
» 20	Up	iP		08	11	34
	Sk	eP		08	11	26

Sea of Japan.

» 20	Gb	iP		08	17	45
» 20	Up	i(P)		16	17	59
	Sk	i(P)		16	17	57 C
» 20	Ki	e(Sg)		16	47	19
» 21	Ki	e(Sg)		10	13	52
» 21	Ki	iPg		12	50	20
		iSg		12	51	06
		△ = 390 km = 3.5°.				
	Sk	iPg		12	50	03
		iSg		12	50	36
		△ = 290 km = 2.6°.				

Presumably off central part of the

1959
Oct 21 (cont.)

Norwegian coast, 66.4°N, 12.3°E.
Origin time = 12 49 11.

» 22	Up	iP		10	00	21
» 22	Ki	iP		19	37	16

Aleutian Islands.

» 23	Up	iSn		03	57	08
		i		03	57	31
		iSg		03	57	34
				μ	s	
		Sg	Z′	0.1	0.5	
		△ = 570 km = 5.1°.				
	Ki	eP*		03	55	59
		iSg		03	57	06
				μ	s	
		Sg	Z′	0.1	0.7	
		△ = 470 km = 4.2°.				
	Sk	iPg		03	55	11 D
		iSg		03	55	26
		△ = 130 km = 1.2°.				
	Gb	eSg		03	58	29
		△ = 760 km = 6.8°.				

Sweden-Norway, 64½°N, 13¾°E.
Origin time = 03 54 46.

» 23	Sk	iP		13	32	28

Sicily.

» 23	Up	iP		17	01	42 D
				μ	s	
		P	Z′	0.1	1.0	
	Ki	iP		17	02	09
	Gb	iP		17	01	55

Iran.

» 24	Up	iP		23	47	44
		iPP		23	49	01
		iS		23	53	33
		iSS		23	55	33
		iScS		23	57	54
		iLg1		23	59	23
		i!		23	59	55
		i!		00	00	10
				μ	s	
		P	Z′	0.3	1.0	
		M	E	11	14	
		M	N	8.9	14	
		M	Z	12	13	
		△ = 4050 km = 36½°.				
	Ki	iP		23	47	48 C
		i		23	47	54
		i		23	59	12
		iLg1		23	59	37
		i(Lg1)		23	59	45
		i(Lg1)		23	59	52
		i!		00	02	30
				μ	s	
		P	Z′	0.4	1.0	

1959
Oct 24 (cont.)

		M	E	17	13	
		M	N	9.0	10	
		M	Z	15	9	
	Sk	iP		23	48	09
		i(ScS)		23	58	26
		i(Li)		23	59	43
		i		00	00	06
	Gb	iP		23	48	05
		i		23	48	11
		iPP		23	49	38

Kirghiz, USSR. Magn. = 6.0 (Up, Ki).

» 25	Ki	iP		06	58	09 D

Atlantic Ocean, north of the Azores.

» 25	Up	iP		16	03	23
		i		16	03	26
		iS		16	07	54
				μ	s	
		P	E	0.5	3	
		P	N	0.4	2	
		P	Z′	0.6	1.2	
		S	N	1.0	5	
		M	E	1.4	15	
		M	N	2.2	16	
		M	Z	1.5	16	
		△ = 2900 km = 26°.				
	Ki	iP		16	04	12
		i		16	04	14
		iPP		16	05	07
				μ	s	
		P	Z′	0.4	1.0	
		△ = 3450 km = 31°.				
	Gb	iP		16	03	33

Turkey. Magn. = 6.2 (Up, Ki).

» 26	Up	iP		07	46	38 C
		i(PP)		07	49	40
		iS		07	56	05
				μ	s	
		P	E	1.1	6	
		P	N	1.4	7	
		P	Z	3.3	7	
		P	Z′	1.7	1.5	
		S	E	3.8	9	
		S	N	1.5	6	
		M	E	19	19	
		M	N	16	18	
		M	Z	16	14	
		△ = 8000 km = 72°.				
	Ki	iP		07	45	58
		iPP		07	48	24
		iS		07	54	47
		iScS		07	55	54
				μ	s	
		P	Z	3.1	7	
		P	Z′	1.8	2.0	
		PP	Z′	0.7	2.0	
		S	E	5.0	10	
		S	N	2.2	9	

1959
Oct 26 (cont.)

		M	E	39	16	
		M	N	17	15	
		M	Z	28	16	
		△ = 7400 km = 66½°.				
	Sk	iP		07	46	33 C
		i		07	46	41
		i		07	48	47
		iPP		07	49	12
	Gb	iP		07	46	57
		i		07	49	35
		iPP		07	49	51

Honshu, Japan (h ~ 60 km). Magn. = = 6.8 (Up, Ki).

» 26	Up	iP		10	39	30
		i		10	39	41
		ipP		10	40	03
	Ki	eP		10	38	40

Kamchatka. h = 130 km (Up).

» 26	Up	ePKP		12	26	21
	Sk	i(PKP)		12	26	30

Kermadec Islands.

» 26	Up	iP		22	45	56
» 27	Ki	iP		06	23	17

Oregon.

» 27	Up	iP		07	03	44 C
		i(PP)		07	05	59
				μ	s	
		P	N	5.4	18	
		P	Z	10	21	
		M	E	28	22	
		M	N	67	24	
		M	Z	74	24	
	Ki	iP		07	02	54 C
		e		07	06	47
		iS		07	11	02
		i		07	13	05
				μ	s	
		P	N	2.3	18	
		P	Z	7.3	19	
		P	Z′	0.8	1.0	
		S	E	7.3	15	
		S	N	4.7	16	
		M	E	41	17	
		M	N	64	20	
		M	Z	74	20	
	Sk	iP		07	03	33
	Gb	iP		07	04	03 C

Kurile Islands (h ~ 100 km). Magn. = = 6.7 (Up, Ki). Well developed surface waves in spite of the focal depth.

» 27	Up	iP		13	29	53
	Ki	iP		13	29	06

Kurile Islands.

1959						
Oct 27	Ki	eP		22	27	41
	Honshu, Japan.					
» 28	Up	iP		00	10	01 D
	Nepal.					
» 28	Up	iP		03	19	50
				μ	s	
		P	z′	0.1	0.6	
	Ki	iP		03	19	25 C
» 28	Up	iSg		10	43	48
		△=710 km=6.4°.				
	Ki	ePg		10	41	25
		eSg		10	42	10
		△=380 km=3.4°.				
	Sk	iPg		10	41	08 C
		iSg		10	41	40
		△=280 km=2.5°.				
	Near west coast of Norway, 66.3°N, 12.8°E. Origin time=10 40 18.					
» 29	Up	iP		10	46	22
		iPcP		10	46	48
	Ki	iP		10	45	34
				μ	s	
		P	z′	0.1	1.0	
	Sk	iP		10	46	11
	Gb	iP		10	46	43 C
	Kurile Islands.					
» 29	Up	iPg		11	58	55
		i		11	58	58
		iSg		11	59	40
		△=390 km=3.5°.				
	Near coast of the Baltic States. Explosion?					
» 29	Up	iP*		12	52	01
		iPg		12	52	08
		i		12	52	11
		iS*		12	52	45
		iSg		12	52	55
				μ	s	
		Sg	z′	0.1	0.5	
		△=400 km=3.6°.				
	Ki	eSg		12	56	27
	Near coast of the Baltic States. Origin time=12 50 56. Explosion?					
» 29	Up	iPKP		14	39	35
				μ	s	
		PKP	z′	0.3	0.5	
		M	E	1.7	22	
		M	N	1.7	23	
		M	Z	4.0	24	
	Ki	iPKP		14	39	21
				μ	s	
		M	E	2.2	22	

1959						
Oct 29		M	N	1.6	21	
(cont.)		M	Z	3.7	21	
	Sk	iPKP		14	39	28 D
	Gb	iPKP		14	39	40 C
	Kermadec Islands. Magn.=6.0 (Up, Ki).					
» 29	Up	iP		14	40	06
		iPP		14	42	36
		iS		14	47	58
		iScS		14	48	58
				μ	s	
		P	z′	0.3	0.5	
		PP	N	0.6	4	
		PP	z′	0.3	1.0	
		S	E	2.3	5	
	Ki	iP		14	39	27
		iPP		14	41	44
		iS		14	46	46
		eSS		14	50	44
				μ	s	
		P	z′	0.9	0.9	
		PP	z′	0.5	1.7	
		S	E	3.4	9	
	Sk	iP		14	40	03
		ipP		14	41	53
		iS		14	47	51
	Gb	iP		14	40	25
		iS		14	48	38
	China-Korea. h=550 km (Sk). Magn.= =6.2 (Up, Ki).					
» 29	Up	iP		18	27	41
	Ki	eP		18	28	43
	Cyprus.					
» 29	Up	iP		20	01	32
	Ki	iP		20	00	54
	Sk	iP		20	01	28
	Honshu, Japan.					
» 29	Ki	e		20	27	15
		e(Sg)		20	27	25
» 30	Up			—		
				μ	s	
		M	E	1.0	17	
		M	N	1.1	19	
		M	Z	1.4	21	
	Ki	eP		00	45	40
	Caroline Islands.					
» 30	Up	iP		04	08	57
		i		04	09	02
				μ	s	
		P	z′	0.2	1.0	
		M	E	1.0	15	
		M	N	1.0	17	
		M	Z	0.9	18	
	Ki	iP		04	07	58 C

1959						
Oct 30				μ	s	
(cont.)		P	z′	0.4	1.0	
		M	E	2.2	22	
	Sk	iP		04	08	42
		i		04	08	46
	Gb	iP		04	09	21
	Yakutsk, USSR. Magn.=6.2 (Up, Ki).					
» 30	Up	iP*		07	55	37
		iPg		07	55	42
		i		07	55	44
		iS*		07	56	24
		iSg		07	56	29
		△=400 km=3.6°.				
	Near coast of the Baltic States. Origin time=07 54 32. Explosion?					
» 30	Up	iPg		09	10	59
		i		09	11	02
		iS*		09	11	40
		iSg		09	11	47
				μ	s	
		Sg	z′	0.1	0.5	
		△=400 km=3.6°.				
	Sk	eSg		09	14	09
	Near coast of the Baltic States. Origin time=09 09 48. Explosion?					
» 30	Up	iPKP		11	46	30
	Sandwich Islands.					
» 30	Ki	i(Pg)		12	50	05
		iSg		12	51	00
	Sk	e(Sg)		12	53	53
» 30	Up	iP		13	38	17
» 30	Up	ePKP		14	17	56
				μ	s	
		M	E	0.5	19	
		M	N	1.2	20	
		M	Z	1.4	21	
	Ki			—		
				μ	s	
		M	E	0.7	17	
		M	N	0.9	20	
		M	Z	1.3	19	
	Gb	iPKP		14	18	05
		i		14	18	19
	Tonga Islands.					
» 30	Up	iP		14	56	14 D
» 31	Up	ePKP		04	45	34
		i		04	45	58
		iSKP		04	48	37
		iSKKP		04	57	46
				μ	s	
		SKP	z′	0.1	1.4	

1959						
Oct 31	Ki	iPKP		04	45	28
(cont.)	Sk	iPKP		04	45	39 C
		iSKP		04	48	28
	Gb	ePKP		04	45	45
		i		04	45	58
		iSKP		04	48	51
	Fiji Islands (h ~ 450 km).					
» 31	Up	iP		09	46	54 D
» 31	Ki	eP		17	11	14
	Japan Sea.					
Nov 1	Ki	eP		09	30	20
	Greenland.					
» 1	Ki	iP		16	01	26
	Rhodes Island.					
» 2	Up	iP		05	19	44
	Assam.					
» 2	Up	iP		08	56	44
		i		08	56	55
		i		08	57	04
				μ	s	
		M	E	1.2	18	
		M	N	1.5	19	
		M	Z	1.8	22	
	Ki	iP		08	56	14
				μ	s	
		M	E	4.1	21	
		M	N	2.6	20	
		M	Z	3.9	24	
	Sk	iP		08	56	42
		iPP		09	00	03
	Gb	eP		08	57	02
		i		08	57	10
	Mariana Islands. Magn.=5.8 (Up, Ki).					
» 2	Ki	iP		09	14	30
	Mariana Islands (h ~ 100 km).					
» 2	Up	i(P)		12	10	13
		iPP		12	11	48
	Ki	iP		12	10	15
	Sk	iP		12	10	38
	Kirghiz-China.					
» 2	Up	iP		13	26	09
		i		13	26	10
				μ	s	
		P	z′	0.1	0.6	
		M	N	3.2	20	
	Ki	iP		13	26	07
				μ	s	
		M	N	1.5	18	
	Sk	iP		13	26	27 C
	Gb	iP		13	26	28 C
	Pakistan-Burma (h ~ 100 km).					

1959 Nov 2	Ki	iP		13	39	58
Alaska.						
» 2	Up	iPKP		20	22	09
		i		20	39	59
				μ	s	
		M	E	3.2	22	
		M	N	4.3	21	
		M	Z	1.9	20	
	Ki	iPKP		20	21	59
				μ	s	
		M	E	4.9	22	
		M	N	2.6	20	
		M	Z	5.8	23	
	Sk	iPKP		20	22	10
	Gb	iPKP		20	22	19C
New Britain (h ~ 60 km). Magn. = 6.3 (Up, Ki).						
» 2	Up	iP		21	21	57
	Ki	iP		21	21	04
	Gb	iP		21	22	21
		i		21	22	31
Kamchatka.						
» 2	Up	iPKP		22	12	50
	Gb	iPKP		22	12	48
		i		22	13	02
Tonga Islands.						
» 3	Ki	iP		00	45	37C
Molucca Passage.						
» 3	Up	iPg		07	39	17
		iSg		07	39	29
				μ	s	
		Sg	z′	0.3	0.5	
		△ = 100 km = 0.9°.				
	Sk	i(Lg1)		07	41	14
	Gb	e(Lg1)		07	40	24
Central Sweden. Macroseismic epicenter: 59.6°N, 15.8°E. Origin time = = 07 38 59.						
» 3	Gb	iPKP		09	24	38
		i		09	24	53
Tonga Islands.						
» 3	Up	iP		09	53	57
		i		09	57	19
		iPP		09	58	00
				μ	s	
		P	z′	0.1	1.0	
		PP	z′	0.2	1.5	
		M	E	2.7	23	
		M	N	7.1	27	
		M	Z	4.5	23	
		△ ~ 11200 km ~ 101°.				
	Ki	iP		09	53	53D

1959 Nov 3 (cont.)				μ	s	
		P	z′	0.3	1.5	
		M	E	4.9	16	
		M	N	3.8	19	
		M	Z	3.9	18	
	Sk	iPP		09	58	26
	Gb	iPP		09	58	33
South of Java. Magn. = 6.4 (Up, Ki).						
» 3	Up	iP		16	37	46
	Ki	iP		16	37	53
» 4	Ki	iP		06	51	01
		e		06	55	51
	Sk	iP		06	51	43
		i		06	53	28
» 4	Up	iP		07	30	49D
» 4	Up	iPKP		18	41	54
Tonga Islands.						
» 5	Up	iP		11	11	31
				μ	s	
		P	z′	0.1	0.6	
	Ki	iP		11	11	54C
	Sk	iP		11	11	55
Chagos Islands, Indian Ocean.						
» 5	Up			—		
				μ	s	
		M	E	1.3	20	
		M	N	2.6	21	
		M	Z	2.4	21	
	Ki	ePKP		12	09	05
				μ	s	
		M	E	0.9	18	
		M	N	0.8	19	
		M	Z	1.2	18	
	Sk	iPKP		12	09	14
New Hebrides Islands (h ~ 100 km).						
» 5	Ki	e		14	25	17
		i(Sg)		14	25	20
	Sk	e		14	25	32
		e(Sg)		14	26	36
» 5	Up	iP		15	10	49
				μ	s	
		P	z′	0.2	0.7	
	Ki	iP		15	10	17D
				μ	s	
		P	z′	0.1	1.0	
	Sk	iP		15	10	48
Ryukyu Islands (h ~ 250 km). Magn. = 5.7 (Up, Ki).						
» 5	Up	i(P)		19	12	53

1959 Nov 6	Up	eL		02	09	
				μ	s	
		M	E	0.9	19	
		M	N	1.0	20	
		M	Z	1.0	20	
	Ki	eL		02	07	
				μ	s	
		M	E	0.9	18	
		M	N	0.8	19	
		M	Z	1.4	20	
Solomon Islands.						
» 6	Up	eP		07	41	35
				μ	s	
		M	E	0.8	11	
	Ki	iP		07	42	48
				μ	s	
		M	E	1.8	16	
		M	N	0.5	11	
	Sk	iP		07	42	14
	Gb	iP		07	41	13
Yugoslavia.						
» 6	Up	iPKP		12	02	39C
	Gb	iPKP		12	02	50
		i		12	03	09
Tonga Islands.						
» 6	Up	e(P)		12	21	55
» 6	Up	iP		20	40	51
» 6	Ki	iP		21	15	27
» 6	Up	iP		22	09	28
» 6	Gb	iP		23	46	54
Turkey.						
» 7	Up	iP		02	37	36
				μ	s	
		M	E	1.4	19	
		M	N	1.5	13	
		M	Z	0.8	17	
	Ki	eP		02	38	45
				μ	s	
		M	E	3.0	19	
		M	N	1.2	18	
		M	Z	1.2	18	
	Sk	iP		02	37	59
	Gb	iP		02	37	04
Algeria.						
» 7	Up	iP		06	29	53
Greece.						
» 7	Ki	iP		13	29	39
» 7	Up	iP		15	29	52
Chagos Islands, Indian Ocean.						

1959 Nov 7	Up	ePKP		22	35	48
				μ	s	
		M	E	0.5	17	
		M	N	1.4	20	
		M	Z	0.6	18	
	Ki			—		
				μ	s	
		M	E	1.1	20	
		M	N	1.3	20	
		M	Z	2.1	21	
	Gb	iPKP		22	35	57
		i		22	36	09
		i		22	36	24
Tonga Islands. Magn. = 5.9 (Up, Ki).						
» 8	Gb	iPKP		02	37	16
Kermadec Islands.						
» 8	Up	iP		14	05	48
		iPcP		14	06	25
		iP′P′		14	34	14
				μ	s	
		P	z′	0.3	1.5	
		M	E	28	20	
		M	N	26	16	
		M	Z	19	20	
	Ki	iP		14	05	04
		i		14	05	34
		eS		14	13	15
		iScS		14	14	50
				μ	s	
		P	z′	0.3	1.5	
		M	E	46	17	
		M	N	27	17	
		M	Z	27	17	
		△ = 6650 km = 60°.				
	Sk	eP		14	05	50
	Gb	iP		14	06	11D
Hokkaido, Japan. Magn. = 6.4 (Up, Ki). Abnormally large surface waves.						
» 9	Up	iP		00	18	29
	Ki	eP		00	18	07
	Sk	iP		00	18	11
Mexico.						
» 9	Ki	eP		02	24	41
» 9	Ki	eP		02	53	00
» 9	Ki	iP		12	23	44C
» 9	Up	iPKP		20	07	39
Kermadec Islands.						
» 9	Up	i(P)		22	23	00
		i		22	23	23
» 10	Up	i(P)		01	58	44

1959						
Nov 10	Up	iP		18	06	01 D
		i		18	06	12
				μ	s	
		P	z′	0.1	0.5	
	Ki	iP		18	07	23
		i		18	07	49
	Sk	iP		18	06	54
		i		18	06	57
	Rumania (h ~ 160 km).					
» 10	Up	iP		20	29	13
	Sk	iP		20	29	57
	Greece.					
» 10	Up	iP		21	05	13 D
		iLg1		21	22	25
				μ	s	
		P	z′	0.1	0.5	
		M	E	4.5	16	
		M	N	24	20	
		M	Z	3.7	18	
	Ki	iP		21	05	04
		iSa		21	16	12
		i		21	18	37
				μ	s	
		M	E	4.8	20	
		M	N	11	21	
		M	Z	4.8	20	
	Sk	iP		21	05	27
	Tibet. Magn. = 6.1 (Up, Ki).					
» 11	Up	iP		12	37	12
		i		12	37	22
		i		12	38	21
» 11	Ki	iP		17	37	10
» 12	Up	iP		07	19	45
» 12	Ki	i(Pg)		12	40	30
		iSg		12	41	26
» 12	Up	iP		12	53	56 D
» 13	Up	i(P)		07	46	03
» 13	Ki	iP		08	56	31
	Irak-Iran.					
» 13	Ki	iP		09	27	58
	Irak-Iran.					
» 13	Gb	i(P)		11	03	47 C
	Local blast?					
» 13	Up	i(P)		12	10	19
» 13	Gb	iP		15	03	56
» 13	Up	iP		20	44	52
» 14	Ki	i(P)		07	38	53

1959						
Nov 14	Up	iPKP		12	08	44
		i		12	08	49
	Sk	iPKP		12	08	38
	Kermadec Islands.					
» 14	Up	iP		12	13	08
				μ	s	
		P	z′	0.1	1.0	
» 15	Ki	iP		04	14	08
	Aegean Sea.					
» 15	Up	iP		09	59	42
» 15	Up	iP		10	32	59 C
		i		10	33	06
		iPP		10	34	38
		iS		10	39	12
		i		10	44	30
				μ	s	
		P	z′	0.6	0.7	
		PP	E	0.8	3	
		M	E	10	19	
		M	N	8.8	17	
		M	Z	15	20	
	△ = 4650 km = 42°.					
	Ki	iP		10	33	00
		ePcS		10	38	51
		iS		10	39	15
		iLg1		10	47	10
		i		10	47	31
				μ	s	
		P	E	0.7	6	
		P	Z	0.7	6	
		P	z′	0.7	0.7	
		S	E	1.4	9	
		S	N	0.6	9	
		M	E	5.8	11	
		M	N	5.9	12	
		M	Z	5.4	12	
	△ = 4650 km = 42°.					
	Sk	iP		10	33	22
		i		10	33	30
	Gb	iP		10	33	23 C
		i		10	33	37
		i		10	36	29
	Kashgar, China. Magn. = 6.5 (Up, Ki).					
» 15	Up	iP		17	13	40 C
		iS		17	17	40
				μ	s	
		P	E	6.7	14	
		P	N	49	13	
		P	Z	75	13	
		P	z′	1.1	0.5	
		S	N	85	12	
		M	N	360	18	
		M	Z	520	20	
	△ = 2450 km = 22°.					
	Ki	iP		17	14	54 C

1959						
Nov 15		i		17	18	35
(cont.)		i		17	19	14
		iS		17	19	49
		i		17	22	53
				μ	s	
		P	N	5.3	12	
		P	Z	10	10	
		P	z′	2.4	1.5	
		S	E	35	13	
		S	N	36	15	
		M	E	210	15	
		M	N	160	15	
		M	Z	180	15	
	△ = 3350 km = 30°.					
	Sk	iP		17	14	20 C
	Gb	iP		17	13	20 C
	Ionian Sea. Magn. = 6.9 (Up, Ki).					
» 15	Up	iP		17	36	24 C
				μ	s	
		P	z′	0.1	0.5	
	Ki	iP		17	37	40
	Sk	iP		17	37	04
	Ionian Sea.					
» 15	Up	iP		17	51	49
	Sk	eP		17	52	28
		i		17	52	37
	Ionian Sea.					
» 15	Up	iP		21	01	49 C
	Sk	eP		21	02	29
	Ionian Sea.					
» 16	Up	iP		10	32	19 C
		eS		10	41	20
				μ	s	
		P	Z	0.8	3	
		P	z′	0.4	1.8	
		S	N	1.4	13	
		M	N	2.4	20	
		M	Z	3.2	20	
	△ = 7550 km = 68°.					
	Ki	iP		10	32	57 C
		eS		10	42	27
				μ	s	
		P	Z	1.5	4	
		P	z′	0.9	2.0	
		S	E	0.5	12	
		S	N	0.8	12	
		M	E	1.3	16	
		M	N	1.2	18	
		M	Z	2.2	19	
	△ = 8200 km = 74°.					
	Sk	iP		10	32	25 C
	Gb	iP		10	31	55
	Mid-Atlantic Ridge. Magn. = 6.3 (Up, Ki).					
» 16	Ki	iP		20	58	23
	Sk	iP		20	58	33 D

1959						
Nov 16	Ki	iP		23	56	52
	Talaud Islands.					
» 17	Ki	iP		00	03	16
	Mariana Islands.					
» 17	Up	iP		02	44	55
				μ	s	
		P	z′	0.1	1.0	
	Ki	iP		02	45	17
				μ	s	
		P	z′	0.1	1.5	
	Indian Ocean. Magn. = 5.6 (Up, Ki).					
» 17	Up	iP		04	43	32
» 17	Ki	iP		19	18	28
» 17	Up	ePKP1		23	31	04
		iPKP2		23	31	33
	Ki	e(PKP)		23	30	42
	Sk	ePKP1		23	30	59
		iPKP2		23	31	19
	Off North Island, New Zealand.					
» 18	Up	iP		00	04	53
				μ	s	
		P	z′	0.1	0.8	
		M	N	1.1	19	
	Ki	iP		00	04	42
				μ	s	
		M	N	0.6	19	
	Sk	iP		00	05	07 D
	Gb	iP		00	05	13
	Sikang Province, China.					
» 18	Up	eP		01	03	06
» 18	Up	i(P)		05	53	31
		i		05	53	50
» 18	Up	iP		13	44	39
	Ki	iP		13	44	11
	Sk	iP		13	44	37
	Mariana Islands (h ~ 200 km).					
» 18	Ki	i(Pg)		21	07	09
		iSg		21	07	58
» 19	Up	iPKP		05	45	25
	Ki	ePKP		05	45	11
	Gb	iPKP		05	45	38
	Tonga Islands.					
» 19	Up	i(P)		08	15	18 C
» 19	Up	e		11	27	35
		iPP		11	28	08
		i!		11	28	36
		e(SKSP)		11	37	47

1959
Nov 19 (cont.)

	ePPS		11	38	59
			μ	s	
	PP	z′	0.2	1.3	
	M	E	11	20	
	M	N	22	20	
	M	Z	9.4	22	
	△=12600 km=113½°.				
Ki	iP		11	22	56
	iPKP		11	27	11
	iPP		11	27	30
	i!		11	28	05
	iPS		11	36	51
	iPKKP		11	38	17
			μ	s	
	PP	E	0.5	8	
	PP	N	0.3	8	
	PP	Z	1.1	8	
	PP	z′	1.1	2.2	
	M	E	15	24	
	M	N	5.7	20	
	M	Z	9.6	23	
	△=12000 km=108°.				
Sk	ePKP		11	27	08
	iPP		11	27	53
	e		11	37	31

New Guinea (h ~ 100 km). Magn.=6.9 (Up, Ki).

» 19	Up	iP	14	05	21C
		i	14	05	33
		iS	14	09	20
			μ	s	
		P z′	0.1	0.6	
		M E	7.1	18	
		M N	4.6	19	
		M Z	3.9	10	
		△=2450 km=22°.			
	Ki	iP	14	06	32D
		ePcS	14	13	15
		eLg1	14	15	50
			μ	s	
		P z′	0.1	1.0	
		M E	6.2	13	
		M N	2.0	10	
		M Z	1.8	13	
	Sk	iP	14	06	03
		i	14	06	08
	Gb	iP	14	05	13

Turkey. Magn.=5.4 (Up, Ki).

» 20	Up			—	
			μ	s	
		M E	1.0	21	
		M N	1.0	19	
	Ki	iP	00	04	46
		eS	00	13	37
			μ	s	
		S E	0.4	8	
		S N	0.4	9	
		M E	0.5	13	
		M N	0.6	18	
		M Z	0.7	17	

1959
Nov 20 (cont.)

		△=7450 km=67°.			
	Sk	iP	00	04	59

Oregon.

» 20	Up	iPKP	00	40	29
		i	00	40	33
			μ	s	
		PKP z′	0.1	0.5	
	Ki	iPKP	00	40	12
	Sk	iPKP	00	40	22
	Gb	iPKP	00	40	39

Kermadec Islands.

» 20	Up	iSg	13	18	06
		i	13	18	11
		i	13	18	18
	Sk	iSg	13	20	03

South Sweden, 56.9°N, 14.7°E. Origin time=13 16 17. Explosion?

» 20	Up	iSg	13	25	13
	Sk	eSg	13	27	13

South Sweden, 56.9°N, 14.7°E. Origin time=13 23 25. Explosion?

» 20	Up	iSg	13	40	30
		i	13	40	32
		i	13	40	37
		△=370 km=3.3°.			
	Sk	iSg	13	42	28
		△=760 km=6.8°.			
	Gb	iSg	13	39	36
		△=190 km=1.7°.			

South Sweden, 56.9°N, 14.7°E. Origin time=13 38 41. Explosion?

» 20	Up	iSg	19	23	56
	Gb	eSg	19	23	02

South Sweden, 56.9°N, 14.7°E. Origin time=19 22 07. Explosion?

» 20	Up	iSg	19	25	13

Presumably same origin as preceding events.

» 20	Ki	iP	19	41	18
	Gb	iP	19	40	08C

Mid-Atlantic Ridge.

» 20	Up	eSg	20	23	50
	Gb	eSg	20	22	52

South Sweden, 56.9°N, 14.7°E. Origin time=20 21 59. Explosion?

» 21	Ki	e(P)	06	20	37
		i	06	20	53

1959
Nov 21 (cont.)

		iSg	06	21	37
	Sk	iSg	06	21	45
» 21	Up	iP	12	25	28
» 21	Up	i(P)	18	25	32
		i	18	25	38
» 22	Ki	e(P)	04	23	22
		e(Sg)	04	24	34
» 22	Up	iP	16	44	28
» 22	Up	eL	17	40	
			μ	s	
		M E	2.0	18	
		M N	1.9	19	
		M Z	2.9	18	
	Ki	eL	17	38	
			μ	s	
		M E	1.2	16	
		M N	1.4	20	
		M Z	1.1	17	

South Pacific Ocean.

» 22	Up	i(PKP)	19	52	57 P_1''
		iPKP	19	53	03 P″
			μ	s	
		PKP z′	0.2	0.6	
	Ki	e(PKP)	19	52	39 P_1''
		iPKP	19	52	50 P″
		iSKP	19	55	30
			μ	s	
		SKP z′	0.1	0.7	
	Sk	e(PKP)	19	52	49 P_0''
		i	19	52	54 P_1''
		iPKP	19	53	01 P″
		iSKP	19	55	53
	Gb	iPKP	19	53	04 P_0''D

Fiji Islands (h ~ 550 km). The notation for the multiple PKP-phases after G. Payo Subiza and M. Båth (Geophys. J., 8:496—513, 1964) is given to the right of the resp. times.

» 23	Up	iP	12	13	39
			μ	s	
		P z′	0.1	0.5	
» 23	Up	iSn	13	23	33
		i	13	23	43
		iSg	13	23	46
		i	13	23	51
		△=360 km=3.2°.			
	Sk	ePg	13	23	19
		eSg	13	24	11
		△=440 km=4.0°.			
	Gb	e(Pg)	13	22	29
		i	13	22	43
		iSg	13	22	52

1959
Nov 23 (cont.)

		△=180 km=1.6°.			

Norway-Sweden, 59½°N, 11½°E. Origin time=13 21 59.

» 23	Up	eSg	13	50	03
		△=390 km=3.5°.			
	Sk	eSg	13	50	33
		△=500 km=4.5°.			
	Gb	iSg	13	49	00
		△=180 km=1.6°.			

Oslo Fjord, Norway, 59¼°N, 10¾°E. Origin time=13 48 06.

» 23	Up	iP	21	17	09
			μ	s	
		P z′	0.1	0.6	
	Ki	iP	21	16	44
			μ	s	
		P z′	0.1	1.3	

Formosa. Magn.=6.0 (Up, Ki).

» 24	Up	iSg	09	53	17
	Sk	eSg	09	54	01
	Gb	i	09	51	33
		iSg	09	51	50

Oslo Fjord, 58½°N, 10¾°E. Origin time=09 51 12.

» 24	Up	iSg	10	37	14
	Sk	eSg	10	37	59
	Gb	i(Pg)	10	35	24
		i	10	35	29
		iSg	10	35	46

Oslo Fjord, 58½°N, 10¾°E. Origin time=10 35 09.

» 24	Up	iP	15	09	33D
	Ki	iP	15	09	14

Luzon, Philippine Islands.

» 24	Up			—	
			μ	s	
		M E	1.2	21	
		M N	1.9	19	
		M Z	2.0	21	
	Ki	iP	20	18	04

Mid-Atlantic Ridge.

» 25	Up	iP	03	36	41
» 25	Ki	iP	19	17	24D

South of Mindanao, Philippine Islands.

» 25	Up	iP	20	30	34
» 26	Ki	e(PKP)	06	18	48
		iPKP	06	19	25

Sandwich Islands.

1959						
Nov 26	Up	iP		07	19	31
		i		07	19	37
		iPP		07	23	17
		e(S)		07	30	46
				μ	s	
		P	z′	0.1	0.8	
		(S)	N	12	30	
		M	E	9.1	21	
		M	N	10	23	
		M	Z	8.6	22	
	Ki	iP		07	19	29
		i		07	19	45
		iS		07	30	26
		i		07	30	46
				μ	s	
		S	N	3.1	20	
		M	E	9.5	20	
		M	N	6.3	21	
		M	Z	5.2	20	
		△=10300 km=92½°.				
	Sk	iP		07	19	45
		i		07	19	58
		iPP		07	23	43
	Gb	i(PP)		07	23	39
	Sumatra. Magn.=6.6 (Up, Ki).					
» 26	Up	iP		23	22	35
		e(SKS)		23	33	21
		iS		23	33	34
				μ	s	
		P	z′	0.2	1.0	
		S	N	16	21	
		M	E	22	19	
		M	N	22	23	
		M	Z	23	19	
		△=10300 km=92½°.				
	Ki	iP		23	22	35
		i		23	22	54
		iSKS		23	33	02
		iS		23	33	32
		i		23	33	51
				μ	s	
		P	Z	1.5	5	
		P	z′	0.4	1.5	
		SKS	E	1.4	10	
		S	N	7.1	20	
		M	E	23	19	
		M	N	17	19	
		M	Z	18	18	
		△=10300 km=92½°.				
	Sk	iP		23	22	50 D
		i		23	23	07
	Sumatra. Magn.=6.8 (Up, Ki).					
» 26	Up	iP		23	25	49
				μ	s	
		P	z′	0.1	1.0	
	Ki	iP		23	25	48
				μ	s	
		P	z′	0.2	1.0	

1959						
Nov 26	Sk	iP		23	26	01
(cont.)	Sumatra.					
» 27	Up	iP		00	27	20 C
		i		00	27	24
		i		00	28	52
				μ	s	
		P	z′	0.3	0.8	
	Ki	iP		00	28	33
				μ	s	
		P	z′	1.2	2.5	
	Sk	iP		00	28	00
		i		00	28	07
	Gb	iP		00	27	06
		i		00	27	26
	Greece. Magn.=6.1 (Up, Ki).					
» 27	Up	iP		00	31	08
		i		00	31	15
				μ	s	
		P	z′	0.3	0.7	
	Ki	iP		00	32	23
				μ	s	
		P	z′	0.2	1.5	
	Sk	iP		00	31	49
		i		00	31	55
	Gb	iP		00	31	01
	Greece. Magn.=6.0 (Up, Ki).					
» 27	Up	iP		00	57	39
	Sk	iP		00	58	21
	Gb	iP		00	57	20 C
	Greece.					
» 27	Up	iP		05	49	51
» 27	Up	iP		06	43	30
	Sk	iP		06	44	09
	Greece.					
» 27	Up	iP		14	12	11
	Gb	iP		14	12	03
» 27	Ki	iP		19	04	39
	Sumatra.					
» 28	Up	iPKP		00	36	43
	Sk	iPKP		00	36	39
	Off North Island, New Zealand.					
» 28	Up	iP		03	18	55
» 28	Up	iP		03	32	23
		i		03	32	32
				μ	s	
		M	E	2.0	21	
		M	N	2.0	20	
		M	Z	2.5	22	
	Ki	iP		03	31	54
		i		03	32	21

1959						
Nov 28				μ	s	
(cont.)		M	E	1.7	19	
		M	N	1.0	18	
		M	Z	1.4	15	
	Sk	iP		03	32	23
	Ryukyu Islands. Magn.=5.6 (Up, Ki).					
» 28	Up	iSg		08	03	05
		△=340 km=3.0°.				
	Ki	eSn		08	05	31
		e		08	05	52
		iSg		08	06	37
		△=1040 km=9.4°.				
	Sk	eS*		08	05	01
		iSg		08	05	24
		i		08	05	44
		△=800 km=7.2°.				
	Near coast of the Baltic States (Island of Ösel), 58.5°N, 22.8°E. Origin time =08 01 25. Explosion?					
» 28	Gb	iP		10	30	11
» 28	Up	iSKSP		13	04	07
				μ	s	
		SKSP	E	3.1	20	
		M	E	3.2	20	
		M	N	1.8	18	
		M	Z	3.6	20	
	Ki	eSKS		13	00	44
		eSKSP		13	04	30
				μ	s	
		SKS	E	0.6	8	
		SKSP	E	1.5	18	
		M	E	1.8	18	
		M	N	1.2	18	
		M	Z	1.1	17	
	Chile. Magn.=6.0 (Up, Ki).					
» 28	Up	iPKP		22	58	20 D
	Ki	iPKP		22	58	06 C
				μ	s	
		PKP	z′	0.2	1.0	
	Sk	iPKP		22	58	17
	Gb	iPKP		22	58	26 C
		i(SKP)		23	01	38
	New Hebrides Islands.					
» 29	Up	iP		05	38	22
» 29	Up	iPKP		06	06	04
				μ	s	
		PKP	z′	0.1	0.5	
	Sk	iPKP		06	05	59 D
	Gb	iPKP		06	06	11 C
	Kermadec Islands (h ~ 300 km).					
» 29	Up	i(PKP)		11	04	36

1959						
Nov 29	Up	eL		20	30	
				μ	s	
		M	E	0.7	18	
		M	N	0.8	19	
		M	Z	1.6	20	
	Ki	eL		20	39	
				μ	s	
		M	E	0.6	18	
		M	N	0.6	19	
		M	Z	1.0	18	
	South Pacific Ocean.					
» 29	Up	iP		23	54	59
		i		23	55	10
		i		23	55	15
				μ	s	
		M	E	1.0	17	
		M	N	0.4	15	
	Ki	iP		23	56	10
				μ	s	
		M	E	0.6	14	
	Sk	eP		23	55	41
	Greece.					
» 30	Up	iP		11	20	32
		i(PP)		11	22	02
		iPP		11	22	11
		iSS		11	29	46
		i!		11	31	28
		i!		11	33	26
		iLg1		11	33	45
				μ	s	
		P	z′	0.2	0.9	
		M	E	16	11	
		M	N	32	16	
		M	Z	17	11	
		△=4550 km=41°.				
	Ki	iP		11	20	21
		i		11	20	29
		iPP		11	21	58
		eSS		11	29	00
		iLi		11	32	33
		iLg1		11	33	15
				μ	s	
		P	z′	0.3	0.8	
		PP	z′	0.5	2.0	
		M	E	11	13	
		M	N	7.2	10	
		M	Z	8.8	12	
		△=4400 km=39½°.				
	Sk	iP		11	20	50
		i		11	20	59
		iPP		11	22	33
		iLg1		11	34	44
	Gb	iP		11	21	09
		i		11	28	26
		i		11	30	50
		i		11	31	53
	Sinkiang Province, China. Magn.=6.2 (Up, Ki). Extremely clear channel waves, especially Lg1.					

1959						
Nov 30	Up	iP		15	28	48 D
		i		15	28	52
				μ	s	
		P	z′	0.1	0.5	
	Ki	iP		15	27	52 D
		i		15	27	57
				μ	s	
		P	z′	0.2	1.0	
	Sk	iP		15	28	20
	Gb	iP		15	28	57
		i		15	29	01
	Kenai Peninsula, Alaska. Magn. = 6.1 (Up, Ki).					
Dec 1	Up	iP		12	40	55
	Sk	eP		12	41	34
	Greece.					
» 1	Up	iP		12	43	43 C
		i		12	43	49
		iPP		12	44	11
		iS		12	47	48
				μ	s	
		P	N	0.6	3	
		P	Z	1.0	4	
		P	z′	0.5	1.0	
		PP	N	0.8	3	
		S	E	1.2	5	
		S	N	1.3	5	
		M	E	4.6	10	
		M	N	4.9	11	
		M	Z	5.4	12	
	△ = 2450 km = 22°.					
	Ki	iP		12	44	57 C
		i		12	45	04
				μ	s	
		P	z′	0.4	1.5	
		M	E	6.4	10	
		M	N	4.2	12	
		M	Z	5.4	12	
	Sk	iP		12	44	22
	Gb	iP		12	43	28 C
	Greece. Magn. = 5.9 (Up, Ki).					
» 1	Up	iP		12	51	15
	Sk	iP		12	51	57
	(Greece).					
» 1	Up	iP		12	56	56
		i		12	57	03
		iPP		12	57	19
				μ	s	
		P	z′	0.2	0.7	
	Ki	iP		12	58	10
	Sk	iP		12	57	35
	Gb	iP		12	56	40
	Greece.					
» 1	Up	e		15	45	14
				μ	s	
		M	E	3.0	22	

1959						
Dec 1		M	N	2.2	20	
(cont.)		M	Z	4.4	21	
	Ki	e(PKP2)		15	20	39
		e		15	44	42
				μ	s	
		M	E	3.3	20	
		M	N	2.4	21	
		M	Z	2.9	21	
	Balleny Islands. Magn. = 6.3 (Up, Ki).					
» 1	Up	iP		18	24	26
	Ki	iP		18	24	11
	Mindanao (h ~ 400 km).					
» 2	Ki	iP		04	28	27 D
	Kamchatka.					
» 2	Gb	i(P)		07	06	05
» 2	Up	iP		07	43	01
	Ki	iP		07	43	01
	Sk	iP		07	43	15
	Sumatra (h ~ 150 km).					
» 2	Up	iP		07	54	24
		ipP		07	54	48
				μ	s	
		M	E	1.1	20	
		M	N	1.5	24	
		M	Z	1.4	18	
	Ki	iP		07	54	20
				μ	s	
		P	E	0.4	10	
		P	N	0.3	10	
		M	E	0.9	18	
		M	N	1.0	18	
		M	Z	1.0	18	
	Sk	iP		07	54	40
		ipP		07	55	02
	Burma. h = 100 km (Up, Sk).					
» 2	Up	i		09	51	31
		iPP		09	51	49
		iSKS		09	58	17
		iPS		10	00	40
				μ	s	
		PP	z′	0.4	1.9	
		M	E	7.2	22	
		M	N	11	22	
		M	Z	11	22	
	Ki	iP		09	47	29
		iPP		09	51	25
		i!		09	55	10
		iSKS		09	58	01
		eS		09	58	36
		ePS		10	00	18
				μ	s	
		P	Z	1.0	5	
		P	z′	0.2	1.5	
		PP	Z	1.2	6	

1959						
Dec 2		SKS	E	2.4	9	
(cont.)		S	N	0.6	8	
		M	E	8.5	22	
		M	N	8.8	22	
		M	Z	8.6	20	
	△ = 10700 km = 96½°.					
	Sk	e(P)		09	48	00
	Celebes. Magn. = 6.5 (Up, Ki).					
» 2	Up	i(P)		11	58	42
» 2	Up	i(P)		13	44	46
		i		13	45	18
		iSg		13	45	21
				μ	s	
		Sg	z′	0.1	0.5	
	Gb	iSg		13	43	47
» 2	Up	iP		13	48	15
» 2	Up	iP		18	23	50 C
	Ki	iP		18	25	17
	Sk	iP		18	24	30
	Yugoslavia.					
» 2	Up	i(P)		18	28	23
» 2	Up	iP		23	03	39
	Ki	iP		23	02	45
	Aleutian Islands.					
» 3	Ki	iPKP		02	14	29
	Sandwich Islands.					
» 3	Up	i(P)		03	28	37
		i		03	29	40
» 3	Up	iP		14	10	41
		i		14	11	09
	Assam.					
» 3	Up	e(P)		18	25	29
» 3	Ki	iP		21	01	20
		i		21	01	22
				μ	s	
		i	z′	0.9	0.5	
	Local blast?					
» 4	Up	iP		09	06	25
		i		09	06	39
	Ki	iP		09	07	32 C
	Sk	iP		09	07	01
	Gb	iP		09	05	51
	Crete.					
» 4	Gb	iPKP		09	42	30
	Fiji Islands (h ~ 650 km).					
» 4	Up	iP		13	46	36

1959						
Dec 4	Up	iPKP		18	29	04 D
	Ki	iPKP		18	28	45 D
	Kermadec Islands.					
» 5	Up	iP		16	08	09
	Sk	iP		16	08	48
	Greece.					
» 5	Up	i(P)		18	25	11
		i		18	25	35
» 6	Up	iP		14	59	27 D
» 6	Sk	i(P)		21	27	36
» 7	Up	iP		05	27	18
				μ	s	
		P	z′	0.1	0.7	
	Ki	iP		05	26	42 D
	Honshu, Japan.					
» 7	Up	iP		08	27	21 D
» 7	Up	iP		19	11	43
	West Pakistan.					
» 8	Up	iP		03	11	39
	Ki	iP		03	10	48
	Sk	iP		03	11	22
	Honshu, Japan.					
» 8	Ki	iP		08	11	52
		i		08	11	58
				μ	s	
		P	z′	0.2	1.0	
		M	E	1.8	16	
		M	N	1.1	14	
		M	Z	1.7	15	
	Sk	eP		08	11	37
	Off north coast of Iceland.					
» 8	Ki	iP		08	51	51
	Caucasus.					
» 8	Ki	iP		09	41	32
				μ	s	
		P	z′	0.1	1.1	
	Turkey.					
» 8	Ki	iP		12	28	49
	Sk	iP		12	29	08
	Afghanistan-Tadzhik.					
» 8	Ki	iP		12	58	46
		iPP		13	00	28
				μ	s	
		P	z′	0.2	1.5	
		M	E	1.9	17	
		M	Z	1.8	17	
	△ = 4800 km = 43°.					
	Iran.					

1959 Dec 8	Up	iP		13	39	20
		i		13	39	24
		iS		13	43	53
				μ	s	
		P	z′	0.5	1.0	
		S	N	1.9	6	
		M	E	10	15	
		M	N	27	17	
		M	Z	18	16	
		△=2800 km=25°.				
	Ki	iP		13	40	04C
		i		13	40	25
		eSa		13	45	59
		iLg1		13	49	07
		iLg2		13	49	47
				μ	s	
		P	z′	0.4	1.4	
		M	E	19	13	
		M	N	12	13	
		M	Z	14	11	
	Gb	iP		13	39	35D
		i		13	39	54
	Georgia, USSR. Magn.=5.9 (Up, Ki).					
» 8	Up	iP		23	33	02
» 9	Up	iP		03	57	07
		i		03	57	27
				μ	s	
		M	E	1.8	21	
		M	N	4.1	20	
	Ki	iP		03	57	50
				μ	s	
		M	E	1.8	15	
		M	N	1.1	16	
	Georgia, USSR.					
» 9	Ki	iPKP		13	08	15
		i		13	08	23
	Off North Island, New Zealand.					
» 9	Ki	iP		17	00	16
	Turkey.					
» 9	Up	iP		18	33	14C
	Ki	iP		18	33	12
	Tibet.					
» 10	Up	i(P)		01	18	55
		iSg		01	19	48
» 10	Up	iP		01	47	49
				μ	s	
		P	z′	0.1	1.0	
» 10	Up	iP		13	07	57
	Sk	eP		13	08	42
	Greece.					
» 10	Up	iP		18	48	32

1959 Dec 11	Ki	iP		00	45	38D
				μ	s	
		P	z′	0.1	1.2	
	Banda Sea.					
» 11	Ki	i(P)		01	15	27
» 11	Up	e		02	27	25
				μ	s	
		M	E	0.8	21	
		M	N	1.1	22	
		M	Z	1.1	23	
	Ki	e		02	11	26
				μ	s	
		M	E	0.8	19	
		M	N	0.9	20	
		M	Z	1.3	21	
	Gb	iPKP		01	58	26
	Tonga Islands.					
» 11	Up	iP		07	31	57
» 11	Up	iP		07	43	06C
» 11	Up	i		09	09	54
		iSg		09	10	14
	Ki	iSg		09	12	59
	Sk	i		09	12	02
		iSg		09	12	10
	Presumably southwest coast of Finland. Origin time=09 08 34. Explosion?					
» 11	Sk	eP		22	42	05
» 12	Ki	iP		10	59	30
» 12	Up	i(P)		12	05	07
				μ	s	
		(P)	z′	0.1	0.5	
» 12	Ki	iPg		13	09	35
		iSg		13	09	59
				μ	s	
		Sg	z′	0.2	0.8	
» 12	Ki	iP		20	06	53
	Algeria.					
» 13	Up	iP		00	49	11
» 13	Up	iP		01	04	19
» 13	Up	iP		02	13	10
		i		02	13	16
	Ki	iP		02	14	03
	Gb	eP		02	13	16
	Turkey.					
» 13	Ki	iPg		02	55	37
		iSg		02	56	01

1959 Dec 13 (cont.)				μ	s	
		Sg	z′	0.1	0.7	
	Probably same origin as for the shock on Dec. 12 at 13 09.					
» 13	Up	iSg		03	22	36
	Sk	i(S*)		03	21	48
		iSg		03	22	03
	Gb	eSg		03	21	33
	Southwest Norway, 60°N, 7°E. Origin time=03 19 34.					
» 13	Up	i(P)		05	40	54
» 13	Ki	iP		05	53	00C
	Java.					
» 13	Up	eP		13	13	32
	Sk	eP		13	14	14
	(Greece).					
» 13	Up	iP		23	32	38C
	Ki	iP		23	32	08D
	Sk	iP		23	32	36
	Gb	iP		23	32	54
	Mariana Islands.					
» 14	Up	eP		01	56	23
» 14	Ki	e		11	29	55
		e(Sg)		11	30	06
» 14	Up	iP		12	53	04
	Gb	iP		12	53	47
» 14	Up	ePKP		13	17	08
	Kermadec Islands.					
» 14	Up	iP		18	11	35
		iSKS		18	21	52
		iS		18	22	28
				μ	s	
		P	z′	0.1	1.0	
		M	E	1.7	22	
		M	N	2.2	18	
		M	Z	1.6	20	
	Ki	iP		18	11	19
		i		18	11	32
		iSKS		18	21	35
		iS		18	22	02
				μ	s	
		P	z′	0.3	1.3	
		SKS	E	1.0	7	
		S	N	1.4	12	
		M	E	1.0	16	
		M	N	1.5	19	
		M	Z	1.2	17	
	Sk	iP		18	11	41
	Gb	iP		18	11	50
	Mindanao (h ~ 200 km). Magn.=6.2 (Up, Ki).					

1959 Dec 14	Up	iP		20	39	48
» 14	Ki	iP		22	02	34D
		i		22	02	42
				μ	s	
		P	z′	0.3	1.7	
	Celebes.					
» 14	Up	iP		22	11	53C
		iPcP		22	12	24
		iS		22	20	54
				μ	s	
		P	z′	0.6	1.0	
		S	N	1.8	7	
		M	E	4.7	18	
		M	N	7.1	20	
		M	Z	8.4	20	
		△=7550 km=68°.				
	Ki	iP		22	10	57
		i		22	11	01
		iS		22	19	17
				μ	s	
		P	z′	1.1	1.0	
		S	E	1.7	11	
		S	N	1.7	9	
		M	E	7.6	19	
		M	N	3.7	18	
		M	Z	4.7	18	
		△=6650 km=60°.				
	Sk	iP		22	11	29C
	Gb	iP		22	12	09C
		i		22	12	52
	Aleutian Islands. Magn.=6.5 (Up, Ki).					
» 14	Up	i(PKP)		22	39	16
» 14	Up	iPKP		23	40	57C
		iPP		23	42	37
		iPKS		23	44	28
		iSKKS		23	49	36
		iPKKP		23	50	50
		iSKSP		23	52	26
		e		23	54	10
		iPKKS		23	54	35
				μ	s	
		PKP	Z	3.1	5	
		PKP	z′	0.8	0.7	
		PP	N	1.1	4	
		PP	z′	0.5	1.5	
		PKS	N	1.4	3	
		PKKS	z′	0.2	1.5	
		M	E	32	19	
		M	N	40	19	
		M	Z	37	19	
		△ ~ 13850 km ~ 124½°.				
	Ki	iPKP		23	41	11C
		iX		23	41	49
		iPP		23	43	32
		iPKS		23	44	38
		i		23	45	34

1959 Dec 14 (cont.)		PKP	N	μ 1.6	s 4	
		PKP	Z	8.4	4	
		PKP	Z′	12	3.0	
		PP	Z′	2.3	2.5	
		PKS	E	12	5	
		PKS	N	14	5	
		PKS	Z	4.4	8	
		M	E	33	18	
		M	N	43	18	
		M	Z	58	18	
	Sk	iPKP		23	41	01
	Gb	iPKP		23	40	51
		iX		23	41	27
		iPP		23	42	21
		iPKKP		23	51	00
	Sandwich Islands. Magn. = 7.2 (Up, Ki). Good records for the study of core phases.					
» 15	Up	iP		00	04	39
» 15	Up	iP		00	10	16
» 15	Up	iP		05	17	29
		P	Z′	μ 0.1	s 1.2	
	Ki	iP		05	17	01
		P	Z′	μ 0.1	s 1.2	
	Mariana Islands.					
» 15	Up	iP		10	55	22
		i		10	55	30
		P	Z′	μ 0.2	s 1.0	
	Ki	eP		10	55	32
	Sk	iP		10	55	49
	Gb	iP		10	55	51
	Hindu Kush.					
» 15	Up	iP		11	38	27
	Ki	iP		11	37	58
	Mariana Islands.					
» 15	Up	iPKP		12	34	49C
	Ki	iPKS		12	38	31
	Sandwich Islands.					
» 15	Ki	ePKP		15	09	10
	New Zealand.					
» 15	Up	iP		17	16	45
	Ki	eP		17	15	53
	Aleutian Islands.					
» 15	Up	iP		23	05	48
	Sk	iP		23	06	24C
	Italy.					
» 16	Up	iP		05	31	10

1959 Dec 17	Up	iP		00	51	31C
» 17	Up	iP		02	43	04
		i		02	43	07
		P	Z′	μ 0.3	s 0.8	
		M	E	1.1	20	
	Ki	iP		02	42	41C
		P	Z′	μ 0.4	s 1.0	
		M	E	0.9	20	
	Sk	iP		02	43	08
	Gb	iP		02	43	23
	Formosa. Magn. = 6.4 (Up, Ki).					
» 17	Up	iP		02	59	00
		P	Z′	μ 0.1	s 0.8	
	Ki	iP		02	58	37C
		P	Z′	μ 0.1	s 1.0	
	Formosa.					
» 17	Gb	iPKP		03	15	32
	Tonga Islands (h ~ 100 km).					
» 17	Ki	iP		05	15	20
		i		05	15	32
	Honshu, Japan.					
» 17	Up	iP		06	07	01
		i		06	07	10
	Ki	iP		06	07	02C
		i		06	07	16
		P	Z′	μ 0.1	s 1.3	
	Sumatra.					
» 17	Ki	e(P)		06	13	14
		i		06	13	27
» 17	Sk	i(P)		13	59	39
» 17	Sk	eP		20	16	05
	Greece.					
» 18	Up	iPKP		10	15	40
		i		10	15	47
	Sk	iPKP		10	15	37
	Fiji Islands (h ~ 600 km).					
» 18	Up	iP		16	35	50C
		i		16	35	56
		P	Z′	μ 0.3	s 1.0	
		M	E	3.2	17	
		M	N	5.4	18	
		M	Z	4.3	18	
	Ki	iP		16	34	57
		i		16	35	56

1959 Dec 18 (cont.)		P	Z′	μ 0.5	s 1.0	
		M	E	4.3	19	
		M	N	3.0	16	
		M	Z	4.3	19	
	Sk	iP		16	35	27
	Gb	iP		16	36	06C
		i		16	36	18
	Aleutian Islands. Magn. = 6.4 (Up, Ki).					
» 18	Up	iP		18	17	30D
	Sk	iP		18	17	55
	Tibet.					
» 19	Up	eL		15	46	
		M	E	μ 1.6	s 17	
		M	N	2.0	17	
		M	Z	2.7	17	
	Ki	eL		15	45	
		M	E	μ 1.8	s 18	
		M	N	1.2	18	
		M	Z	1.9	18	
	Lower California. Magn. = 5.8 (Up, Ki).					
» 19	Up	iP		23	04	04
	Sk	iP		23	04	44
	Greece.					
» 20	Up	iP		02	39	10D
	(Greece).					
» 20	Up	iPKP		08	25	29
		i		08	25	36
		PKP	Z′	μ 0.1	s 0.9	
	Ki	iPKP		08	25	15
	Sk	ePKP		08	25	23
		i		08	25	38
	Kermadec Islands.					
» 20	Up	iP		13	06	42
	Ki	iP		13	06	25
	Sk	iP		13	06	46
	Mindanao, Philippine Islands.					
» 20	Up	iP		13	45	53D
	Sk	iP		13	45	45
» 20	Ki	iPg		14	30	23
		i		14	30	35
		iSg		14	31	18
		△ = 470 km = 4.2°.				
	Sk	e(Sg)		14	34	11
» 21	Up	iPKP		10	40	16
		i		10	40	18

1959 Dec 21 (cont.)		PKP	Z′	μ 0.1	s 0.7	
	Ki	ePKP		10	40	05
	Sk	iPKP		10	40	09C
	Gb	iPKP		10	40	24
	Kermadec Islands.					
» 21	Up	i(P)		10	53	40
» 21	Up	i(P)		10	56	58
		i		10	57	11
» 21	Up	iP		11	28	28
		i		11	28	35
		iPP		11	30	31
		iS		11	35	47
		P	Z′	μ 0.3	s 1.0	
		△ = 5800 km = 52.°				
	Ki	iP		11	29	05
		i		11	29	08
		iPa		11	32	25
		iS		11	37	01
		P	E	μ 1.4	s 8	
		P	N	2.1	7	
		P	Z	3.7	8	
		P	Z′	4.4	2.8	
		S	E	7.5	10	
		S	N	5.2	10	
		M	E	67	18	
		M	N	75	15	
		M	Z	75	15	
		△ = 6350 km = 57°.				
	Sk	iP		11	29	01
	Gb	iP		11	28	35
	Gulf of Aden. Magn. = 6.9 (Ki).					
» 21	Up	iPKP		11	33	57
		PKP	Z′	μ 0.4	s 1.5	
	Kermadec Islands.					
» 21	Ki	eP		17	39	09
» 21	Ki	iP		22	22	34
	Alaska.					
» 22	Up	iP		00	18	53C
		P	Z′	μ 0.1	s 1.0	
	Ki	iP		00	19	31
		P	Z′	μ 0.4	s 1.8	
		M	E	1.8	18	
		M	N	1.4	16	
		M	Z	2.3	18	
	Gulf of Aden. Magn. = 5.8 (Up, Ki).					

1959						
Dec 22	Ki	i(P)		02	50	17
		i		02	50	19
	(California).					
» 22	Up	iP		03	57	34
	Ki	iP		03	58	13
» 22	Up	iP		17	31	46C
		ipP		17	31	59
		iPP		17	34	26
				μ	s	
		P	z′	0.1	0.8	
	Ki	iP		17	31	06
		iPP		17	33	27
	Sk	iP		17	31	39
		ePP		17	34	09
	Gb	iP		17	32	09C
		ipP		17	32	22
	Honshu, Japan. h=50 km (Up, Gb).					
» 22	Ki	eP		18	07	50
» 22	Up	iP		20	26	53D
» 23	Ki	eP		03	47	40
		e(Sg)		03	49	09
» 23	Up	iP		03	59	36C
				μ	s	
		P	z′	0.1	0.7	
	Ki	iP		03	58	41C
		i(pP)		03	58	57
				μ	s	
		P	z′	0.4	1.0	
	Sk	iP		03	59	10
	Gb	iP		03	59	49
		i(pP)		04	00	05
	Alaska.					
» 23	Up	iPKP		04	50	42
	Kermadec Islands.					
» 23	Up	iP		09	33	54
		i(pP)		09	34	07
				μ	s	
		(pP)	z′	0.1	1.0	
	Ki	iP		09	35	10
		i(pP)		09	35	23
				μ	s	
		(pP)	z′	0.3	1.5	
	Sk	iP		09	34	29
		i(pP)		09	34	43
	Gb	iP		09	33	35
		i		09	33	40
		iPP		09	33	51
	Near north coast of Sicily.					
» 23	Ki	iP		12	47	21
	Arctic Ocean.					
» 23	Up	iP		13	58	05

1959						
Dec 23	Up	iPKP		14	18	42
		i		14	18	46
		i		14	19	00
	Sk	ePKP		14	18	42
	Kermadec Islands.					
» 23	Up	iP		21	44	25
		i		21	44	28
	Ki	iP		21	45	41
	Sk	iP		21	45	04
	Greece.					
» 24	Sk	eP		01	14	28
» 24	Ki	iP		02	22	44
	Aleutian Islands.					
» 24	Sk	iP		05	43	11
	Sicily.					
» 24	Up	iP		08	21	50
	Ki	iP		08	21	36
	Sk	iP		08	21	30
	Vera Cruz, Mexico (h ~ 200 km).					
» 24	Up	iPKP		09	34	06D
				μ	s	
		PKP	z′	0.1	1.0	
	Sk	e(PKP)		09	34	10
	Gb	iPKP		09	34	15
	Kermadec Islands.					
» 24	Up	iP		13	21	44
	Ki	iP		13	21	23
	Sk	iP		13	21	46
		i		13	22	13
	Mindanao, Philippine Islands.					
» 24	Up	iP		16	34	02
» 24	Up	iP		17	18	08
	Sk	iP		17	18	47
	Greece.					
» 25	Up	eP		01	11	31
	Ki	i(P)		01	10	55
	Aleutian Islands.					
» 25	Up	iPKP		04	08	40
		i		04	08	48
		i		04	08	55
	Ki	iPKP		04	08	26
	Sk	ePKP		04	08	33
		i		04	08	55
	Gb	iPKP		04	08	46
	Kermadec Islands.					
» 25	Up	iPg		09	34	55
		iSg		09	35	41
		△=390 km=3.5°.				
	Ki	eSn		09	37	40

1959						
Dec 25		iS*		09	37	58
(cont.)		iSg		09	38	31
		△=960 km=8.6°.				
	Sk	i(Sn)		09	37	01
		i		09	37	28
		iSg		09	37	37
		△=780 km=7.0°.				
	Gb	eS*		09	37	08
		iSg		09	37	27
		△=750 km=6.7°.				
	Off north coast of Esthonia, 59.6°N, 24.2°E. Origin time=09 33 45. Explosion?					
» 25	Up	ePS		10	47	03
				μ	s	
		M	E	0.5	18	
		M	N	0.6	20	
		M	Z	0.9	19	
	Gb	ePP		10	37	16
	Chile-Argentina (h ~ 100 km).					
» 26	Up	iP		04	48	03
» 26	Up	iPKP		16	34	57
	Kermadec Islands.					
» 26	Up	iP		18	29	20
				μ	s	
		P	z′	0.8	2.0	
		M	E	1.1	20	
		M	N	1.4	18	
	Ki	iP		18	28	23
		i		18	28	24
				μ	s	
		P	z′	0.3	1.5	
		M	E	1.2	18	
		M	N	1.2	19	
		M	Z	1.5	19	
	Sk	iP		18	28	52D
	Gb	iP		18	29	33
		i		18	29	38
	Kenai Peninsula, Alaska. Slightly deeper than normal. Magn.=6.2 (Up, Ki).					
» 26	Up	iP		20	20	38C
	Ki	iP		20	20	24D
		i		20	20	33
	Sk	iP		20	20	53D
	Tibet.					
» 26	Up	iP		22	01	48
				μ	s	
		P	z′	0.2	1.5	
	Ki	iP		22	00	56
	Kamchatka.					
» 26	Up	iP		22	13	08C
		iS		22	21	44

1959						
Dec 26				μ	s	
(cont.)		P	N	0.6	1.2	
		P	z′	1.5	1.2	
		S	E	0.6	4	
		M	E	2.9	20	
		M	N	4.3	21	
		M	Z	3.6	20	
		△=7050 km=63½°.				
	Ki	iP		22	12	15C
		i		22	12	20
		iPP		22	14	22
				μ	s	
		P	z′	0.8	1.0	
		M	E	3.7	20	
		M	N	1.7	18	
		M	Z	3.6	15	
	Sk	iP		22	12	52
		i		22	12	58
	Gb	iP		22	13	26
		i		22	13	36
	Kamchatka. Slightly deeper than normal. Magn.=6.7 (Up, Ki).					
» 26	Up	iP		22	37	25C
		i		22	37	31
	Sk	iP		22	38	05
» 26	Up	iP		22	45	24
		ipP		22	45	33
	Ki	iP		22	44	30
	Kamchatka.					
» 26	Up	iP		22	46	52
		ipP		22	47	04
				μ	s	
		P	z′	0.2	1.0	
	Ki	iP		22	45	59
				μ	s	
		P	z′	0.2	1.0	
	Sk	iP		22	46	36
	Gb	iP		22	47	10
	Kamchatka.					
» 27	Up	iP		00	13	33
	Ki	iP		00	14	42
	Sk	iP		00	14	11
	Crete.					
» 27	Up	iP		01	34	37
	Ki	iP		01	33	43
	Sk	iP		01	34	20
	Kamchatka.					
» 27	Up	iP		02	01	41
» 27	Up	iP		04	58	22C
		ipP		04	58	32
		eS		05	06	58
				μ	s	
		P	N	0.2	2	
		P	Z	0.5	2	

1959
Dec 27 (cont.)

	P	z′	0.2	0.7	
	M	E	2.9	20	
	M	N	3.5	20	
	M	Z	2.4	19	
	△=7100 km=64°.				
Ki	iP		04	57	29
	ipP		04	57	41
			μ	s	
	P	z′	0.4	1.5	
	M	E	3.3	19	
	M	N	2.3	18	
	M	Z	4.3	15	
Sk	iP		04	58	06
Gb	iP		04	58	43
	ipP		04	58	54
Kamchatka. h=40 km (Up, Ki, Gb). Magn.=6.2 (Up, Ki).					
» 27 Up	iP		05	00	02
	i		05	01	01
	i		05	01	21
			μ	s	
	P	z′	0.1	0.6	
Ki	iP		04	59	09 D
			μ	s	
	P	z′	0.1	1.0	
Sk	iP		04	59	46
Kamchatka. Possibly more than one shock (Up).					
» 27 Up	iP		05	12	31
	ipP		05	12	44
			μ	s	
	P	z′	0.1	0.6	
Ki	iP		05	11	38
	i		05	12	03
Sk	iP		05	12	15
Gb	iP		05	12	52
Kamchatka.					
» 27 Up	iP		05	16	50 D
			μ	s	
	P	z′	0.1	0.5	
Ki	iP		05	15	57 C
			μ	s	
	P	z′	0.1	1.0	
Sk	iP		05	16	34
Gb	iP		05	17	10
Kamchatka. Magn.=5.9 (Up, Ki).					
» 27 Up	iP		05	18	15 D
			μ	s	
	P	z′	0.1	0.5	
Ki	iP		05	17	21
			μ	s	
	P	z′	0.1	1.0	
Sk	iP		05	17	58
Gb	iP		05	18	35
Kamchatka. Magn.=5.9 (Up, Ki).					

1959
Dec 27

Up	iP		05	28	08
Ki	iP		05	29	15
Sk	eP		05	28	47
	i		05	28	52
Gb	eP		05	28	05
Crete.					
» 27 Up	iP		06	28	44
			μ	s	
	P	z′	0.1	0.5	
Ki	iP		06	27	50
Sk	iP		06	28	28
Gb	iP		06	29	03
Kamchatka.					
» 27 Up	iP		06	55	11 C
Ki	iP		06	54	17
Sk	iP		06	54	54
Gb	iP		06	55	30
Kamchatka.					
» 27 Up	iP		07	02	11 C
			μ	s	
	P	z′	0.4	1.0	
	M	E	1.4	18	
	M	N	1.6	20	
	M	Z	2.0	21	
Ki	iP		07	01	17 C
	i		07	01	20
	i		07	01	39
			μ	s	
	P	z′	0.3	1.0	
	M	E	1.8	20	
	M	N	0.6	15	
	M	Z	1.6	16	
Sk	iP		07	01	53
	ipP		07	02	04
Gb	iP		07	02	29
Kamchatka. Magn.=6.3 (Up, Ki).					
» 27 Up	eP		07	32	48
» 27 Up	iP		07	56	01 D
Ki	iP		07	55	07
Sk	eP		07	55	44
Gb	iP		07	56	21
Kamchatka.					
» 27 Up	iP		08	05	31 D
	i		08	05	34
Ki	iP		08	04	38
Sk	iP		08	05	15
Gb	iP		08	05	50
Kamchatka.					
» 27 Up	iP		08	16	07 D
Ki	iP		08	15	14
Sk	iP		08	15	51
Gb	iP		08	16	27
Kamchatka.					

1959
Dec 27

Up	iP		08	16	46
	ipP		08	16	56
			μ	s	
	P	z′	0.1	0.9	
Ki	iP		08	15	53
			μ	s	
	P	z′	0.2	1.3	
Sk	iP		08	16	30
Gb	iP		08	17	05
Kamchatka. Magn.=5.8 (Up, Ki).					
» 27 Up	iP		08	54	02
» 27 Up	iP		11	59	32
Ki	iP		11	58	38
	ipP		11	58	50
Gb	iP		11	59	52
Kamchatka.					
» 27 Up	iP		12	05	25 C
	ipP		12	05	37
			μ	s	
	P	z′	0.5	1.3	
	M	E	2.1	22	
	M	N	2.0	22	
	M	Z	1.7	21	
Ki	iP		12	04	32
	i		12	04	54
			μ	s	
	P	z′	0.5	1.5	
	M	E	1.7	19	
	M	N	1.2	18	
	M	Z	1.9	14	
Sk	iP		12	05	09
Gb	iP		12	05	45 C
	ipP		12	05	57
Kamchatka. h=50 km (Up, Gb). Magn.=6.3 (Up, Ki).					
» 27 Up	iP		12	07	07 D
» 27 Up	iPKP		12	56	34
	i(PKKP)		13	07	55
Ki	iPKP		12	56	42 D
	iPP		12	57	43
Sk	iPKP		12	56	36
Argentina (h ~ 650 km).					
» 27 Up	iP		16	03	11 C
	iPa		16	07	10
	iS		16	11	26
			μ	s	
	P	E	0.7	4	
	P	N	1.4	4	
	P	Z	3.5	5	
	P	z′	0.6	0.8	
	S	E	10	14	
	S	N	5.1	15	
	M	E	54	20	
	M	N	84	20	
	M	Z	96	21	

1959
Dec 27 (cont.)

	△=6850 km=61½°.				
Ki	iP		16	02	16 C
	ipP		16	02	30
	iPP		16	04	23
	ePa		16	05	31
	iS		16	09	46
			μ	s	
	P	N	2.3	7	
	P	Z	4.1	5	
	P	z′	1.1	1.0	
	PP	Z	2.8	7	
	S	E	8.7	11	
	S	N	3.9	8	
	M	E	34	16	
	M	N	50	18	
	M	Z	51	17	
	△=5950 km=53½°.				
Sk	iP		16	02	53
	i(PP)		16	05	17
Gb	iP		16	03	32
Kamchatka. Magn.=6.8 (Up, Ki).					
» 27 Up	iP		19	38	18
Ki	iP		19	37	23 D
Kamchatka.					
» 27 Up	iP		19	38	55
Ki	iP		19	38	00
			μ	s	
	P	z′	0.1	1.0	
Sk	iP		19	38	37 D
Gb	iP		19	39	16
Kamchatka. The time interval between this and the preceding shock is 37 sec. The twin shocks at 08 16, Dec. 27, occurred with a time interval of 39 sec, i.e. almost the same. There is a possibility that we have recorded P and pP, i.e. pP — P ≃ 38 sec, corresponding to h=150 km.					
» 27 Up	iP		21	06	57
Ki	iP		21	06	02
			μ	s	
	P	z′	0.1	1.2	
Gb	iP		21	07	17
Kamchatka.					
» 28 Up	iP		01	51	31
Ki	iP		01	50	37
Sk	iP		01	51	14
Gb	eP		01	51	50
Kamchatka.					
» 28 Up	iP		01	54	01 D
			μ	s	
	P	z′	0.1	1.0	
Ki	iP		01	53	08 D
			μ	s	
	P	z′	0.1	1.2	

1959 Dec 28 (cont.)	Sk	iP		01	53	44 D
	Kamchatka. Magn. = 5.7 (Up, Ki).					
» 28	Up	iP		02	19	41
				μ	s	
		P	z′	0.1	0.5	
	Ki	iP		02	19	51 C
	Sk	iP		02	20	08
	Hindu Kush (h ~ 200 km).					
» 28	Up	iP		07	31	09 C
		i(pP)		07	31	24
		iPcP		07	31	40
		ePa		07	35	16
		iS		07	39	42
				μ	s	
		P	N	1.3	3	
		P	Z	2.2	3	
		P	Z′	3.6	2.0	
		S	E	7.3	10	
		S	N	4.3	11	
		M	E	44	23	
		M	N	37	22	
		M	Z	19	21	
		△ = 7150 km = 64½°.				
	Ki	iP		07	30	16 C
		ipP		07	30	27
		iS		07	38	09
				μ	s	
		P	Z	2.7	5	
		P	Z′	1.6	2.0	
		S	E	4.2	12	
		S	N	1.7	12	
		M	E	23	18	
		M	N	19	17	
		M	Z	18	17	
		△ = 6350 km = 57°.				
	Sk	iP		07	30	52
	Gb	iP		07	31	29 C
		ipP		07	31	41
	Kamchatka. h = 50 km (Up, Ki, Gb). Magn. = 6.7 (Up, Ki).					
» 28	Up	iP		07	37	11
» 28	Up	i(P)		07	39	48
» 28	Up	iP		07	51	58
» 28	Sk	iP		10	30	01
	Iceland.					
» 28	Ki	iP		10	34	48
» 28	Up	iP		10	51	22
	Kamchatka.					
» 28	Ki	iP		12	10	14 C
		ipP		12	10	24
	Gb	iP		12	11	27
	Kamchatka.					

1959 Dec 28	Up	iP		13	15	07
		ipP		13	15	19
		iS		13	23	43
				μ	s	
		P	N	0.5	2	
		P	Z	1.1	3	
		P	Z′	2.2	2.2	
		M	E	4.0	25	
		M	N	3.6	22	
		M	Z	2.4	19	
		△ = 7150 km = 64½°.				
	Ki	iP		13	14	15 D
		ipP		13	14	26
				μ	s	
		P	Z′	0.7	1.5	
		M	E	3.7	20	
		M	N	2.3	17	
		M	Z	2.5	17	
	Gb	iP		13	15	27 D
		ipP		13	15	39
	Kamchatka. h = 50 km (Up, Ki, Gb). Magn. = 6.5 (Up, Ki).					
» 28	Up	iP		13	20	40
	Ki	iP		13	19	47
	Gb	iP		13	20	59 D
	Kamchatka.					
» 28	Up	iP		15	56	17
	Sk	iP		15	57	00
	Ionian Sea.					
» 28	Up	iP		17	11	31
» 28	Up	iP		19	53	07
		ipP		19	53	17
	Ki	iP		19	52	14
	Gb	eP		19	53	27
	Kamchatka.					
» 28	Up	iP		19	56	57
	Sk	eP		19	56	40
	Gb	iP		19	57	19
	Kamchatka.					
» 28	Up	iP		20	38	12 D
				μ	s	
		P	Z′	0.2	0.5	
» 28	Ki	iP		21	39	12
	Kamchatka.					
» 28	Ki	iP		23	41	06
	Gb	iP		23	42	20
	Kamchatka.					
» 29	Up	eP		01	58	31
» 29	Up	iP		03	04	00
		ipP		03	04	11

1959 Dec 29 (cont.)				μ	s	
		P	Z′	0.1	1.0	
	Ki	iP		03	03	07
	Sk	eP		03	03	44
	Gb	iP		03	04	19
	Kamchatka.					
» 29	Gb	ePKP		17	34	19
		i		17	34	27
	Tonga Islands.					
» 29	Up	iP		20	21	56
		i		20	21	59
	Ki	iP		20	21	09
	Sk	iP		20	21	50
	Gb	eP		20	22	17
	Lake Baikal, USSR.					
» 29	Up	iP		20	47	40 C
		i		20	50	48
				μ	s	
		P	Z′	0.2	1.0	
	Ki	iP		20	47	13
		i		20	49	19
				μ	s	
		P	Z′	0.4	1.0	
	Sk	iP		20	47	36
		iPP		20	51	17
	Gb	iP		20	47	56
		iPP		20	51	54
	Mariana Islands (h ~ 350 km).					
» 29	Up	iP		21	41	24
	Ki	iP		21	41	14
	Flores Island.					
» 30	Up	iPKP		00	18	32 C
	Ki	iPKP		00	18	00
	Gb	ePKP		00	18	35
	North Island, New Zealand.					

1959 Dec 30	Ki	iP		11	34	25
		i		11	34	30
	Honshu, Japan.					
» 30	Ki	iPg		12	13	46
		iSg		12	14	41
» 30	Up	i(P)		12	59	55
	Gb	iP		13	00	59
» 30	Ki	iP		14	08	57
		ipP		14	09	22
	Sunda Strait (h ~ 150 km).					
» 30	Up	iP		14	27	47 D
	Ki	iP		14	26	54
	Kamchatka. z′					
» 30	Up	iPKP		23	49	32 D
		i		23	49	38
				μ	s	
		PKP	z′	0.1	0.5	
	Ki	ePKP		23	49	10
	Sk	iPKP		23	49	27
	Kermadec Islands (h ~ 400 km).					
» 31	Up	i		00	39	38
		i(Sg)		00	40	47
» 31	Sk	iP		02	58	45 C
	Outer Mongolia-China.					
» 31	Up	i(P)		05	50	45
» 31	Up	iP		07	48	39
» 31	Up	iP		20	59	58
	Ki	iP		21	00	35
				μ	s	
		P	z′	0.2	1.3	
	Azores Islands.					