

KONINKLIJK NEDERLANDSCH METEOROLOGISCH INSTITUUT.

No. 108.

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SEISMIC RECORDS  
AT DE BILT

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31.

1943.

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TE VERKRIJGEN BIJ | EN VENTE CHEZ  
DE RIJKSUITGEVERIJ TE 'S GRAVENHAGE.

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## INTRODUCTION.

The geographic coordinates of the seismic station are:  $52^{\circ} 6',1$  N;  $5^{\circ} 10',6$  E. The instruments are standing 3 m above mean sea-level. The subsoil is sand (diluvial deposits).

The following instruments were used:

two horizontal and one vertical seismograph with galvanometric recording after GALITZIN.

one astatic horizontal seismograph after WIECHERT,  $M = 200$  kg.

two horizontal pendulums after BOSCH,  $M = 25$  kg.

THE GALITZIN SEISMOGRAPHS. Below are given: the period of the galvanometer  $T_1$ , the reduced length of pendulum  $l$ , the distance between the mirror of the galvanometer and the recording paper  $A_1$ , and the limits for the natural period of the undamped pendulum  $T$ , of the damping constant  $\mu$  and of the multiplying factor  $k$  for the year 1942.

	NS comp.	EW comp.	Z comp.
Period of galvanometer $T_1$	24,43 sec	24,96 sec	12,0 sec
Reduced length of pendulum $l$	123,1 mm	122,6 mm	406 mm
Distance $A_1$	1380 mm	1380 mm	1380 mm
Period of pendulum $T$	21,45—23,25 sec	22,20—23,95 sec	12 sec
Damping constant $\mu$	-0,077; 0,054	+0,038; +0,142	0,0
Multiplying factor $k$	10,62; 11,18	10,76; 11,21	178

THE WIECHERT AND BOSCH SEISMOGRAPHS. The mean values of the natural period of the undamped pendulum  $T$ , of the damping ratio  $\epsilon$  and of the static magnification  $V$  are for the year 1943:

	$T$	$\epsilon$	$V$
WIECHERT (NS comp.)	4,9 sec	4	160
„ (EW comp.)	4,9 sec	4	170
BOSCH (NS comp.)	18,0 sec	4	20
„ (EW comp.)	18,0 sec	4	20

## PREFACE

This 31 st number of the De Bilt seismic records has been written by Dr. J. Veldkamp, director of the section terrestrial magnetism and seismology.

*The Director in Chief of the Royal  
Netherlands Meteorological Institute,*

*F. A. Vening Meinesz.*

DE BILT, May 1946.

## THE MEASURING OF THE RECORDS.

For working out the records the seismographs after GALITZIN were used almost exclusively. The velocity of the recording paper is here 30 mm per minute. Only when the earthquake was extraordinarily strong, so that the GALITZIN records could not be disentangled, the records of the seismographs WIECHERT and BOSCH were used. The velocity of the paper on these seismographs is 10 mm and 15 mm per minute respectively. When the WIECHERT and BOSCH records were used, this has been mentioned in the column "remarks".

The time is Greenwich mean time, from midnight till midnight counted as 0 till 24 hours. In the column "direction" + means an upward movement of the soil (compression), - means a downward movement (dilatation). Uncertain data have been given in parenthesis. The subjoined symbols were used for the phases.

- P = normal first phase, or first longitudinal tremor.  
 pP = wave one time reflected at the earth's surface near the epicenter.  
 PP = wave reflected halfway between epicenter and station.  
 PPP = P-wave two times reflected at the earth's surface.  
 PPPP = P-wave three times reflected.  
 S = second phase, arrival of the transversal tremor.  
 sS = S-wave reflected at the earth's surface near the epicenter.  
 PS = wave changed from longitudinal to transversal oscillation through reflection at the earth's surface.  
 PPS = wave twice reflected, having been transversal on one branch of the path.  
 SS = S-wave reflected halfway between epicenter and station.  
 PcP = P-wave reflected at the core boundary.  
 ScS = S-wave reflected at the core boundary.  
 PkP = P' = PcPcP = wave having penetrated the core.  
 SkS = S' = ScPcS = transversal wave, having been longitudinal within the core.  
 pP' = P'-wave reflected near the epicenter.  
 sS' = S'-wave reflected near the epicenter.  
 ScPcP = alternating wave which has penetrated the core.  
 L = long waves or surface waves.  
 M = maximum of the surface waves.  
 L' = surface waves traveling around the major arc.  
 M' = maximum of these waves.

- i = sudden beginning of the phase.  
 e = gradual beginning of the phase.  
 F = end of discernable movement.  
 HO = time of the shock at point of origin.  
 h = depth of the origin.  
 Δ = distance of epicenter.

The indices H, N, E and Z refer to the horizontal, north-south, east-west and vertical components of the movement.

The distance of epicenter and the depth of origin have been calculated by means of the curves of Brunner's "focal depth-time-distance chart" and the time tables of Macelwane (1933).

The data given in the column "amplitude" are the maximum amplitudes measured from the medium line. Generally the first and largest maximum of the L-waves has been given only. The amplitude has been omitted when the oscillations were too irregular. The amplitudes have been calculated by means of the formula:

$$V = \frac{A_1 k T_b}{\pi l} \cdot \frac{1}{\left\{1 + \left(\frac{T_b}{T}\right)^2\right\}^2}$$

Here  $A_1$  is the distance between galvanometer mirror and recording paper,  $k$  is the multiplying factor,  $T_b$  the period of the wave,  $l$  the reduced length of the pendulum,  $T$  the free period of the undamped seismograph, and  $V$  the magnification.

For the horizontal components of the Galitzin records the mean values were used:  $k = 10,9$  and  $T = 24,5$  sec.

For the vertical component of the Galitzin records they were:  $k = 175$  and  $T = 12,0$  sec.

Only a few publications of other seismological stations were available. These were the stations: Bucarest, Collmberg, Pasadena, Uppsala and Zürich.

## THE MICROSEISMIC ACTIVITY.

The table on page VII gives the character of the microseismic activity (see also 1915 p. 101 and 1916 p. 101). The employed numbers 0, 1, 2 and 3 mean:

- 0 very weak and weak
- 1 moderate
- 2 strong
- 3 very strong

For measuring the microseismic activity the records of the WIECHERT seismograph were employed. In the table below the amplitudes of the oscillations (measured from the medium line) and the corresponding amplitudes of the movement of the soil are given.

Character	Ampl. record	Ampl. soil
0	0—1/4 mm	0—1/4 μ
1	1/4—1 „	1/4—5 „
2	1—2 „	5—10 „
3	>2 „	>10 „

Character of the microseismic movement.

Date 1943	Jan.	Febr.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1, 2, 3	2, 3, 2	1, 2, 1	1, 2, 1	0, 1	0, 1	0	0	0, 1	1	0, 1	2
2	3, 2	2, 3, 1	1	1	1	1, 0	0, 1, 0	0, 1, 0	1	1, 2, 1	1	2
3	2, 1	1, 0	1, 0	1	1	0	0, 1, 0	0, 1, 0	1	1, 2, 1	1	2, 1
4	1, 0	0, 1, 0	0, 1, 0	1, 0	1	0	0	0, 1	1, 2	1, 2, 1	1	1
5	0, 1, 0	0, 1	0, 1	0, 1	1	0, 2, 1	0	1, 2, 3	2	1, 2	1	1, 0, 1
6	0, 1	1, 3, 2	1, 0	1, 2	1	1, 0	0, 1	3, 2	2, 1	2	1, 2	1
7	1, 0, 1	2, 1	0, 1	2, 3	1	0	1, 0	2, 1	1, 0	2, 1	2, 3, 2	1, 0
8	1, 0, 1	1, 2	1, 2, 1	3, 2, 1	1, 2, 3	0	0, 1, 0	1, 2, 3	0, 1, 0	1	2, 1	0
9	1	2	1, 2, 1	1, 0	3, 2, 3	0	0, 1, 2	3, 2, 1	0, 1	1, 0	1	0, 1
10	1	2, 1	1	0	3	0	2, 1, 2	1, 2	1	0	1, 2	1
11	1, 2	1, 0	1	0, 1	3, 2, 1	0	2, 1	2, 1	1, 0	0	2	1
12	2, 3, 2	0, 1, 2	1	1	1, 2	0, 1, 0	1, 0, 1	1	0	0, 1	2, 3	1
13	2, 1	2, 3, 2	1	1	2, 1	0	1	1, 3, 2	0, 1	1	3	1
14	1, 2	2	1	1	1	0	1, 0	2, 1	1	1	3, 2	1
15	2, 3, 1	2	1	1	1, 0	0	0, 1, 0	1	1, 2	1, 0	2, 1	1
16	1, 0	2, 1	1, 2	1	0	0	0	1, 0	2, 1	0, 1	1	1
17	0	1	2, 1	1	0	0	0, 1, 0	0	1	1, 2, 1	1	1, 2
18	0	1, 2	1, 0, 1	1	0	0, 2, 1	0	0, 1	1, 0	1	1	2, 3
19	0	2	1, 0	1	0	1, 0	0, 1, 0	1, 0	0, 1	1, 3, 2	1, 0	3, 2
20	0, 1	2, 1	0	1	0	0	0	0	1, 2	2	0, 1, 0	2
21	1	1	0	1	0	0	0, 1, 0	0, 1, 0	2, 1	2	0	2
22	1	1	0	1, 0, 1	0	0	0	0, 1	1	2, 1	0, 1	2
23	1	1	0	1	0, 1	0	0	1, 0	1, 0	1, 0	1, 2, 3	2
24	1, 0, 1	1	0, 1, 0	1, 2	1	0	0	0	0, 1	0, 1	3	2, 1
25	1	1, 2	0	2, 3, 2	1	0	0	0	1	1, 0	3	1, 2, 1
26	1	2, 1	0	2, 3, 2	1	0	0, 1	0	1	0, 1	3, 2	1
27	1	1	0	2, 1	1, 0	0	1, 0	0, 1	1	1, 0	2, 3, 2	1, 2, 1
28	1	1	0	1, 0	0	0	0	1, 3, 2	1, 3, 1	0, 1, 0	2, 3	1
29	1		0, 1	0	0	0	0	2	1	0, 1, 0	3	1, 2
30	1		1, 2	0	0	0	0	2, 1	1	0, 1, 0	3, 2	2
31	1, 3, 2		2, 1		0		0	1, 0				2, 3, 2

Date 1943	Phase	Time			Direction	Period s	Amplitude $\mu$	Remarks
		h	m	s				
Jan. 2 (1)	e	12	21					
	F	12	35					
Jan. 5 (2)	e	0	2					
	F	0	10					
Jan. 6 (3)	e	10	15					
	F	11	15					
Jan. 7 (4)	eL	4	15					
	MH	4	24		18	10		
	Mz	4	24		18	12		
	F	4	45					
Jan. 7 (5)	e	6	26					
	F	6	29					
Jan. 7 (6)	e	8	58					
	F	9	01					
Jan. 7 (7)	eP	11	58	50			(7) $\Delta = 2000$ km.	
	iS	11	22	15				
	eL	11	24					
	F	11	38					
Jan. 7 (8)	i(P)	22	40	18			(8) $\Delta = 2200$ km?	
	i(S)	22	44	05				
	eL	22	48					
	F	23	00					
Jan. 9 (9)	e	0	07					
	F	0	15					
Jan. 11 (10)	eL	12	8	30				
	F	12	15					
Jan. 11 (11)	iP	19	58	49			(11) $\Delta = 5300$ km.	
	iPP	20	00	37			Disturbed by microseismic movement.	
	iS	20	05	30				
	iSS	20	09	00				
	eL	20	13	30				
F	20	50						
Jan. 12 (12)	eL	9	28				(12) Microseisms.	
	F	9	45					
Jan. 13 (13)	eL	8	29					
	ME	8	30		23	5		
	F	8	40					

Date 1943	Phase	Time			Direction	Period	Amplitude $\mu$	Remarks
		h	m	s				
Jan. 14 (14)	e F	20	11	20				
Jan. 15 (15)	e F	18	03					
Jan. 15 (16)	eL F	23	54					
Jan. 16 (17)	eL F	14	38					
Jan. 20 (18)	e Mz F	12	44					
Jan. 23 (19)	eL F	12	58					
Jan. 24 (20)	eL ME F	21	21		25	5	(20) USCGS epicenter $15^{\circ}$ N $91^{\circ}$ W, H.O. $20^{\text{h}}42,1^{\text{m}}$	
Jan. 27 (21)	iP iS iSS eSSS eLE eLNZ eZ ME F	2	57	14			(21) $\Delta = 8500$ km. USCGS: $52^{\circ}$ N $180^{\circ}$ W, H.O. $2^{\text{h}}45, 2^{\text{m}}$ .	
Jan. 30 (22)	(iP) iP iS eLN eLE F	5	45	52			(22) $\Delta = 9300$ km. Epicenter after USCGS: $2^{\circ},0$ S $80^{\circ},0$ W; H.O. $5^{\text{h}}33,0^{\text{m}}$ ; $h = 100$ km. Peru.	
Febr. 3 (23)	e F	0	16					
Febr. 6 (24)	e eLH F	2	52					
Febr. 7 (25)	eL F	6	58					

Date 1943	Phase	Time			Direction	Period	Amplitude $\mu$	Remarks
		h	m	s				
Febr. 8 (26)	eL F	6	49					
Febr. 8 (27)	eL F	21	48					
Febr. 10 (28)	eL F	22	15					
Febr. 14 (29)	iP iS eLH F	7	32	30	(+)		(29) $\Delta = 2100$ km.	
Febr. 16 (30)	e F	7	52					
Febr. 17 (31)	i(PKP) e(SKS) eE e(SS) e(SSS) eL ME F	2	39	55			(31) $\Delta = 16000$ km?	
Febr. 17 (32)	eL F	6	55			25	8	
Febr. 21 (33)	eL MN F	19	14			25	3	
Febr. 22 (34)	iP ePP iS eSS eSSS eL ME F	9	33	29	+		(34) $\Delta = 9500$ km, coast of Mexico. USCGS: $17^{\circ},6$ N $101^{\circ},3$ W. H.O. $9^{\text{h}}20,8^{\text{m}}$ .	
Febr. 23 " 24 (35)	e eL MN F	23	49	20		22	13	
Febr. 24 (36)	e F	20	28					
Febr. 25 (37)	e F	4	45					

Date 1943	Phase	Time			Direction	Period s	Amplitude $\mu$	Remarks	
		h	m	s					
Febr. 28 (38)	e F	4	42						
		4	48						
Febr. 28 (39)	iP	13	02	52	+			(39) $\Delta = 5200$ km, h = 200 km. Hindu Kush. Pasadena: $36^{\circ},5$ N $70^{\circ},5$ E. H.O. $12^h54^m33^s$ , h = 210 km.	
	ez	13	04	00					
	izH	13	04	48	+				
	iz	13	05	07	-				
	izH	13	05	52	+				
	iz	13	06	36	+				
	iS	13	09	35					
	isS	13	10	52					
	eL	13	13	30					
	eL	13	23						
	F	14	10						
March 2 (40)	eN eL ME F	9	38	30		15			
March 4 (41)	eL F	10	52						
		11	35						
March 4 (42)	eL MN F	20	29			15	8		
		20	38						
		21	10						
March 5 (43)	iP iS eSS eH eLz Mez F	0	44	20	-			(43) $\Delta = 9500$ km. USCGS: $5^{\circ},8$ N $82^{\circ},8$ W. H.O. $0^h31^m47^s$ .	
		0	54	48					
		1	00						
		1	07						
		1	15						
		1	16		23	25			
		3	30						
March 7 (44)	iP ePP eS eSS eL ME F	3	12	43	+			(44) $\Delta = 7600$ km. USCGS: $57^{\circ}$ N $164^{\circ}$ E. Kamschatka. H.O. $3^h1,5^m$ .	
		3	15	10					
		3	21	45					
		3	26	30					
		3	34						
		3	43		20	25			
		6	00						
March 9 (45)	iPP iPP iS iPS eSS eSSS eH eL MNZ F	10	08	37	(+)			(45) $\Delta = 12000$ km. USCGS: $56^{\circ}$ S $22^{\circ}$ W, H.O. $9^h48^m37^s$ . Sandwich Isl.	
		10	08	59	-				
		10	16	40					
		10	18	20					
		10	24	30					
		10	27	40					
		10	28	30					
		10	38						
		10	53		19	60			
		13	45						
		13	45						

Date 1943	Phase	Time			Direction	Period s	Amplitude $\mu$	Remarks
		h	m	s				
March 9 (46)	eLE LN MN Mz F	20	30					
		20	37					
		20	42		25	8		
		20	42		25	12		
		21	10					
March 10 (47)	e F	4	06					
		4	15					
March 10 (48)	eH eE eLE eLz F	8	41					
		8	51					
		9	05					
		9	15					
		10	10					
March 11 (49)	e eL MH F	10	44					
		10	47					
		10	55		27	10		
		11	10					
March 12 (50)	e M F	23	13					
		23	25					
		23	55					
March 13 (51)	e F	13	25					
		13	35					
March 14 (52)	eH eL MN	12	43					(52) F in the next earthquake.
		12	46					
		12	52		15	10		
March 14 (53)	eL ME F	13	26					
		13	33		20	15		
		14	10					
March 14 (54)	iPKP iz eSS eSSS eH eL ME F	17	30	49	+			(54) $\Delta = 16000$ km. USCGS: $22^{\circ}$ S $170^{\circ}$ E, H.O. $17^h11^m00^s$ . New Caledonia.
		17	31	36	+			
		17	53	20				
		17	58	30				
		18	12					
		18	21					
		18	35		21	15		
		20	10					
March 15 (55)	iPKP iPP eSS eSSS eL M F	2	44	18	+			(55) $\Delta = 16500$ km. USCGS: $21^{\circ}$ S $169^{\circ}$ E, H.O. $2^h24,6^m$ .
		2	47	48				
		3	07	00				
		3	12	30				
		3	44	30				
		4	01		18	5		
		4	50					

Date 1943	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
March 15 (56)	eSKS	5	13	15	—	30	20	(56) USCGS : 10° N 142° E, H.O. 4 <sup>h</sup> 47.9 <sup>m</sup> , Carolines.
	ePS	5	16	05				
	iPS	5	16	25				
	eSS	5	22	20				
	eSSS	5	26	00				
	eL	5	37					
	ME	5	42					
F	7	20						
March 15 (57)	iPKP	23	18	12	(+)			(57) Pasadena : 14°,5 S 177° W H.O. 22 <sup>h</sup> 59 <sup>m</sup> 15 <sup>s</sup> , h = 300 km. Fidji Isl.
	ipPKP	23	19	42	+			
	i(PP)	23	21	30	—			
	(eZH)	23	23	15				
	eN	23	27	55				
	iz	23	31	07	+			
16	F	1	00					
March 17 (58)	eL	23	48					
	F	24	00					
March 19 (59)	e	10	07					
	F	10	25					
March 20 (60)	ePKP	5	10	20				(60) Wellington : 16°,5 S 175° E. H.O. 4 <sup>h</sup> 50,5 <sup>m</sup> , Fidji Isl.
	eSS	5	32					
	eSSS	5	37	30				
	eLE	5	50					
	eLz	6	05					
	F	7	15					
March 21 (61)	e	11	07					
	F	11	12					
March 21 (62)	iPP	20	56	38	—			(62) $\Delta = 14000$ km. Pasadena : 5°,7 S 152°,2 E H.O. 20 <sup>h</sup> 35 <sup>m</sup> ,4.
	ePS	21	06	00				
	ePPS	21	08	00				
	eSS	21	13	00				
	eSSS	21	17	40				
	eL	21	34					
	ME	21	36			35	50	
F	24	00						
March 22 (63)	e(PP)	8	42	10				(63) $\Delta$ about 12000 km?
	eL	9	15					
	F	9	50					
March 25 (64)	eP	2	54	44	—			(64) $\Delta = 2100$ km.
	iS	2	58	13				
	eL	3	01					
	F	3	10					

Date 1943	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
March 25 (65)	e	11	48					
	F	12	05					
March 25 (66)	e	13	10					
	F	13	15					
March 25 (67)	e	15	46					
	F	15	50					
March 25 (68)	eP	18	46	25				(68) $\Delta = 9100$ km.
	e(S)	18	56	40				
	eSS	19	03					
	eL	19	16					
	ME	19	30		20	35		
	F	21	40					
March 26 (69)	e	4	58					
	F	5	03					
March 26 (70)	iPKP	17	57	56				(70) Wellington : 23° S 176°,5 W.
	eH	18	08	20				
	eSS	18	20	40				
	eLE	18	39					
	eL	18	50					
	F	20	00					
March 29 (71)	eZ	5	26	09				
	e	5	45					
	eL	5	55					
	F	6	30					
March 31 (72)	eL	22	30					(72) Microseisms.
	F	22	40					
April 1 (73)	eS	14	42	55				(73) $\Delta$ about 11000 km.
	eSS	14	50	40				
	eSSS	14	54	30				
	eL	15	04					
	MN	15	18		22	65		
	F	17	00					
April 5 (74)	iP	2	04	44	(-)			(74) $\Delta = 5200$ km. Asia?
	ePP	2	06	30				
	iS	2	11	36				
	iSS	2	15	10				
	eL	2	20					
April 5 (75)	F	3	30					
	e	5	34					
	M	5	35					
	F	5	42					



Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
April 5 (76)	e F	21 49 22 10				
April 6 (77)	iP iPP iSKS iPS eSS eL ME Mz F	16 21 28 16 25 50 16 32 28 16 35 20 16 41 00 16 54 17 08 17 08 22 00	+			(77) $\Delta = 12000$ km., Chile. Violent earthquake ( $m = 8$ ). JSA : $29^{\circ},8$ S $71^{\circ},0$ W, H.O. $16^h07^m28^s$ , $h = 80$ km.
April 7 (78)	eH MH F	9 34 00 9 42 10 00		18	13	(78) Strong microseisms.
April 7 (79)	eL ME F	14 01 14 08 14 40		20	14	(79) Strong microseisms.
April 8 (80)	eL ME F	0 10 0 19 0 45		20	18	(80) Strong microseisms.
April 8 (81)	eL F	23 58 0 20				
April 9 (82)	eP ePP iPPP eSKS ePS eL F	9 03 10 9 07 00 9 09 36 9 13 45 9 16 00 9 36 10 30				(82) $\Delta = 11000$ km. Pasadena : $19^{\circ}$ N $146^{\circ}$ E. H.O. $08^h48^m59^s$ , $h = 170$ km.
April 9 (83)	eH F	19 56 20 20 12				
April 11 (84)	e F	9 15 9 30				
April 11 (85)	iP iPP iS eSS eL MN MN F	14 58 31 15 01 44 15 08 54 15 14 20 15 26 15 31 15 40 18 00	+	25 17	50 100	(85) $\Delta = 9200$ km. Pasadena : off Japan, near $38^{\circ}$ N $142^{\circ}$ E.

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
April 12 (86)	iH eL MH F	4 37 20 4 55 5 02 5 35		23	18	
April 12 (87)	e F	9 45 10 00				
April 12 (88)	iP iS eSS eLH eLz F	19 55 55 20 06 17 20 12 00 20 21 20 31 21 30				(88) $\Delta = 9200$ km, Japan?
April 13 (89)	e F	7 22 7 45				
April 13 (90)	e ME F	9 44 9 48 10 00		24	2	
April 13 (91)	eL MH F	13 20 13 30 13 55		25	5	
April 14 (92)	(eP) e(S) eL F	8 24 24 8 26 30 8 27 8 40				(92) $\Delta = 1100$ km?
April 15 (93)	ePP eSKS ePS eSS eL ME Me Mz F	11 53 30 11 59 50 12 02 55 12 08 00 12 25 12 36 12 42 12 42 14 00				(93) $\Delta = 12000$ km.
April 16 (94)	eP eS eL MN F	11 47 02 11 50 20 11 51 11 52 12 15				
April 17 (95)	e F	2 38 2 45				

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
April 17 (96)	e F	3 40 4 05				
April 19 (97)	e F	2 20 2 35				
April 22 (98)	e F	3 33 3 50				
April 23 (99)	eL F	6 55 7 10				
April 23 (100)	eL MH F	18 57 19 01 19 20		20	3	
April 26 (101)	eL F	22 17 22 35				
April 29 (102)	iPKP iH eSS F	0 02 30 0 12 10 0 25 1 40	(-)			(102) Pasadena: $24^{\circ},5$ S $180^{\circ}$ . H.O. $23^{\text{h}}43^{\text{m}}18^{\text{s}}$ , $h = 530$ km.
April 29 (103)	iP iS eL ME F	15 36 54 15 46 48 16 01 16 04 16 40	+			(103) $\Delta = 8600$ km. Pasadena: Kurile Isl. near $45^{\circ}$ N $147^{\circ}$ E.
April 30 (104)	eL F	2 04 2 30				
April 30 (105)	iP eS eL F	8 40 20 8 43 25 8 45 9 00				(105) $\Delta = 1800$ km.
May 1 (106)	eL F	17 28 18 00				
May 2 (107)	iP eS F	1 09 19 1 10 28 1 20				(107) = 600 km, Schwäbische Alb.
May 2 (108)	iP iPP iS iPS eL ME F	17 30 28 17 33 46 17 40 42 17 41 30 17 52 18 00 21 00	-			(108) $\Delta = 9200$ km. Pasadena: Major earthquake, $6^{\circ},4$ N $80^{\circ},1$ W, H.O. $17^{\text{h}}18,2^{\text{m}}$ .

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
May 3 (109)	eP iPP eSKS eSS eL M F	2 12 40 2 16 55 2 23 20 2 30 40 2 45 2 54 5 30				(109) $\Delta = 11500$ km. Pasadena: $12^{\circ},5$ N $125^{\circ},5$ E, H.O. $1^{\text{h}}59^{\text{m}}12^{\text{s}}$ , Philippines.
May 3 (110)	e F	10 07 10 20				
May 3 (111)	eL F	12 43 13 00				
May 3 (112)	eL MH F	13 29 13 33 14 00		23	5	
May 3 (113)	eL F	17 29 18 05				
May 7 (114)	iz iH eL F	20 43 09 20 44 43 21 03 21 40				
May 11 (115)	e F	20 40 20 48				
May 17 (116)	e F	8 31 8 38				
May 17 (117)	e F	16 35 16 40				
May 18 (118)	iz ez eL F	6 17 50 6 22 10 6 57 7 40				(118) Change of papers $6^{\text{h}}40^{\text{m}}$ — $6^{\text{h}}54^{\text{m}}$ .
May 19 (119)	e F	2 09 2 15				
May 21 (120)	eL ME F	8 14 8 16 8 20		25	1	
May 22 (121)	(iP) iPP ePS eSS eL ME F	9 16 15 9 20 34 9 29 55 9 35 9 53 10 02 11 30				(121) $\Delta = 12000$ km. Pasadena: $30^{\circ},5$ S $72^{\circ}$ W. Aftershock of (77).

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
May 22 (122)	iP iS eL F	22 09 49 22 13 18 22 15 22 40				(122) $\Delta = 2100$ km.
May 23 (123)	e F	12 31 30 12 38				
May 24 (124)	eL MH F	3 18 3 20 3 40		20	3	
May 24 (125)	eL F	15 50 16 10				
May 25 (126)	eP eZ iPP iSKS iS iPS eSS eSSS eL F	23 21 36 23 24 25 23 26 00 23 32 16 23 33 15 23 34 50 23 40 30 23 44 23 55 4 00	+			(126) $\Delta = 11500$ km, Philippine Isl. USCGS: $7^{\circ},5$ N $126^{\circ},5$ E H.O. $23^{\text{h}}7,6^{\text{m}}$ $m = 7,5$ .
May 26	F	4 00				
May 26 (127)	eS eSS eL MH F	10 55 11 01 11 11 11 16 11 45		25	3	(127) USCGS: $17,5$ N $106,5$ W.
May 28 (128)	iP iS eL Mz F	0 25 18 0 26 21 0 26 30 0 27 30 0 50				(128) $\Delta = 550$ km, Schwäbische Alb.
May 28 (129)	iPKP iz epPKP F	20 20 11 20 20 18 20 22 30 20 25	- +			(129) Pasadena: $21^{\circ}$ S $179^{\circ},5$ W H.O. = $20^{\text{h}}01^{\text{m}}30^{\text{s}}$ , $h = 630$ km.
June 1 (130)	eL F	4 51 5 20				
June 1 (131)	e F	9 45 10 10				

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
June 2 (132)	iP e(SS) eL ME F	3 03 56 3 14 10 3 19 3 26 3 40				(132) $\Delta = 5200$ km?
June 2 (133)	e F	6 05 6 25				
June 2 (134)	eL F	13 48 14 00				
June 3 (135)	iz eZ F	12 31 56 12 34 10 13 00	(-)			
June 3 (136)	ePKP ePP F	20 13 22 20 16 30 20 25				(136) Pasadena: $16^{\circ}$ S $173^{\circ}$ W.
June 3 (137)	iz eZ eL ME	21 07 43 21 11 00 21 15 21 23	+			(137) F in the next earthquake.
June 3 (138)	eL ME F	22 05 22 17 23 20				
June 6 (139)	e F	5 55 6 00				
June 7 (140)	iP eS F	11 45 26 11 49 35 12 02	+			(140) $\Delta = 2600$ km.
June 7 (141)	eL F	12 45 12 55				
June 7 (142)	iP iSKS iS iPS eSS eSSS	23 33 48 23 44 23 23 45 10 23 46 23 23 52 23 56				(142) $\Delta = 10500$ km. Pasadena: Epicenter about Sumatra.
June 8	eL ME	0 04 0 10		38	10	

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s		s	$\mu$	
June 8 (143)	iP iS eL MN F	1 22 20 1 27 44 1 30 1 31 2 50		20	70	(143) $\Delta = 3600$ km. BCIS: $35^{\circ}$ N $35^{\circ}$ W.
June 8 (144)	iP eE iSKS iS iE eSS eSSS eL MN F	20 56 21 21 05 30 21 07 00 21 07 30 21 10 20 21 14 20 21 19 00 21 23 21 45 1 30		18	190	(144) $\Delta = 11000$ km, Sumatra. USCGS: $3^{\circ}$ S $102^{\circ},5$ E.
June 9 (145)	eP iSKS eS ePS eSS eL MN F	3 19 36 3 30 16 3 30 46 3 32 3 37 3 50 4 04 8 00		23	310	(145) $\Delta = 11000$ km, Sumatra. Same epicenter as (144).
June 10 (146)	eL F	7 56 8 10				
June 13 (147)	iP ePP iS eSS eSSS eL MN Mz	5 23 49 5 27 00 5 33 54 5 39 20 5 44 20 5 48 5 57 6 01	+	30 23	240 175	(147) USCGS $43^{\circ}$ N $142^{\circ}$ E, Jesso, H.O. $5^{h}11^{m}44^{s}$ .
June 13 (148)	iP iPP iS eSS eL ME F	8 49 07 8 52 12 8 59 10 9 03 40 9 15 9 22 11 30	+	20	35	(148) Aftershock of (147).
June 13 (149)	eL F	17 06 17 35				



Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s		s	$\mu$	
June 13 (150)	eP ePP eS eL F	17 51 30 17 54 30 18 01 38 18 18 19 30				(150) Aftershock of (147).
June 14 (151)	(eP) (ePP) eL F	3 13 25 3 17 18 3 48 4 30				(151) $\Delta = 11000$ km?
June 14 (152)	iP eS eL F	7 50 58 7 54 18 7 56 8 05	(-)			(152) $\Delta = 1900$ km.
June 14 (153)	iP ePP iS eL Mz F	16 34 31 16 37 35 16 45 00 17 00 17 11 17 35		24	5	(153) $\Delta = 9000$ km. Pasadena: Kurile Isl.
June 14 (154)	e F	18 05 18 25				
June 14 (155)	iz F	23 13 43 23 16	-			(155) Pasadena: Tonga region.
June 15 (156)	iP i(pP) iPP iS i(sS) eSS eL Mz F	11 22 54 11 23 14 11 25 58 11 32 56 11 33 25 11 39 30 11 48 12 00 13 00	++ ++ +	23	30	(156) $\Delta = 8900$ km, h = 75 km. Pasadena: Kurile Isl.
June 15 (157)	eP iS ePS eL ME MEZ	18 34 14 18 44 47 18 45 40 19 01 19 05 19 12	+	25 19	13 30	(157) $\Delta = 9500$ km. USCGS: $14^{\circ},5$ N $93^{\circ}$ W. H.O. $18^{h}21,7^{m}$ . F in the next earthquake.
June 15 (158)	iP eL M	19 57 55 19 26 20 35	+	20	4	(158) Aftershock of (157). F in the next earthquake.

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
June 15 (159)	iP	20 38 14	—	20	6	(159) Aftershock of (157).
	eS	20 48 45				
	eL	21 07				
	M	21 16				
	F	21 45				
June 16 (160)	eL	7 15	—	—	—	
	F	7 35				
June 17 (161)	eL	18 00	—	—	—	
	F	18 05				
June 19 (162)	eLz	10 27	—	—	—	
	F	11 00				
June 20 (163)	iP	15 37 33	—	—	—	(163) South coast of the Black Sea. Bucarest: 40° 6' N 30° 1' E. Destructive at Ada Bazar (Turkey).
	iS	15 41 30				
	eL	15 42				
June 20 (164)	e	16 59	—	—	—	(164) Bucarest: aftershock of (163).
	F	17 30				
June 20 (165)	iH	17 59 10	—	23	40	
	iH	18 03 24				
	iE	18 06 40				
	eL	18 09				
	ME	18 12				
	F	19 10				
June 21 (166)	eL	10 52	—	30	4	
	ME	10 54				
	F	11 20				
June 22 (167)	eL	2 27	—	—	—	
	F	2 40				
June 24 (168)	iz	20 41 35	—	—	—	(168) Pasadena: approximately 15° S 168° E, H.O. = 20 <sup>h</sup> 21,6 <sup>m</sup> .
	e	21 03				
	F	21 50				
June 25 (169)	iPKP	19 32 09	—	—	—	(169) Pasadena: approximately 18° S 178° W, H.O. = 19 <sup>h</sup> 13 <sup>m</sup> 28 <sup>s</sup> , h = 550 km.
	eE	19 57 15				
	F	20 30				
June 26 (170)	eL	4 51	—	15	3	
	MN	4 53				
	F	5 05				
June 27 (171)	iP	10 10 30	—	—	—	(171) $\Delta$ = 2500 km.
	eS	10 14 30				
	eL	10 18				
	Mz	10 20				
	F	10 30				

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
June 28 (172)	eL	4 11	—	—	—	
	F	4 40				
June 28 (173)	eE	15 27	—	21	3	
	eL	15 49				
	ME	15 51				
June 29 (174)	F	16 30	—	16	2	
	eL	0 47				
	Mz	0 55				
June 29 (175)	F	1 00	—	—	—	
	e	1 49				
	F	1 51				
June 29 (176)	F	10 35	—	—	—	(176) Beginning during measurement of constants 7 <sup>h</sup> 11 <sup>m</sup> to 10 <sup>h</sup> 05 <sup>m</sup> .
	F	10 35				
June 30 (177)	iz	11 09 37	—	—	—	(177) Pasadena: roughly 7° S 121° E, H.O. = 10 <sup>h</sup> 49 <sup>m</sup> 02 <sup>s</sup> , h = 700 km.
	iz	11 16 01				
	eN	11 14 15				
	eZ	11 21 07				
	eH	11 26 05				
	eH	11 30 00				
	F	12 20				
June 30 (178)	iP	20 26 18	—	—	—	(178) $\Delta$ = 10500 km. USCGS: 14° 5' S 74° W, H.O. = 20 <sup>h</sup> 13,0 <sup>m</sup> .
	eS	20 37 25				
	F	21 20				
July 1 (179)	eL	5 23	—	—	—	
	F	5 45				
July 1 (180)	eL	6 36	—	—	—	
	F	7 05				
July 2 (181)	eL	7 34	—	20	3	
	MH	7 35				
	F	8 05				
July 4 (182)	iP	10 04 24	—	18	4	(182) $\Delta$ = 9200 km. USCGS: 9° N 84° 5' W, H.O. = 9 <sup>h</sup> 52,1 <sup>m</sup> .
	iS	10 14 42				
	eL	10 30				
	MEz	10 41				
	F	11 30				
July 4 (183)	eZ	13 40 09	—	25	3	
	eL	14 10				
	Mz	14 18				
	F	15 00				
	F	15 00				

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
July 4 (184)	e L F	22 40 23 10 23 40				
July 5 (185)	eL F	15 15 16 00				
July 5 (186)	iP iPP eSKS eL MH Mz F	21 21 16 21 25 10 21 31 54 21 52 22 00 22 03 23 00		20 17	6 9	(186) Coast of Peru. USCGS: $17^{\circ},5$ S $73^{\circ}$ W, H.O. = $21^{\text{h}}7,6^{\text{m}}$ .
July 6 (187)	eL M F	13 33 13 35 13 55				
July 7 (188)	eL F	13 55 15 00				
July 8 (189)	eL F	15 27 16 15				
July 9 " 10 (190)	iH eL F	23 50 10 0 12 0 40				
July 11 (191)	iP <sub>1</sub> ' e(P <sub>2</sub> ') ePP ePPP eL ME F	2 30 14 2 31 00 2 34 40 2 39 12 3 25 3 42 6 00	(-)		20 30	(191) $\Delta = 18000$ km. Pasadena: $33^{\circ}$ S $178^{\circ},5$ W, H.O. = $2^{\text{h}}10^{\text{m}}25^{\text{s}}$ , h = 180 km.
July 14 (192)	eL Mez F	21 15 21 22 22 00		17	3	
July 15 (193)	eL F	1 09 1 20				
July 15 (194)	ez eL F	12 14 00 12 20 12 50				
July 15 (195)	iz F	20 50 56 21 45				

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
July 16 (196)	iP iS eL F	1 59 06 2 03 18 2 08 2 25				(196) $\Delta = 2650$ km.
July 16 (197)	eL F	16 30 16 40				
July 18 (198)	eL F	8 46 9 10				
July 19 (199)	eL MH F	1 15 1 17 1 35		20	3	
July 21 (200)	eH eL F	2 14 21 2 16 2 30				(200) $\Delta$ about 2000 km.
July 21 (201)	eL MEZ F	5 17 5 26 6 30		19	4	
July 22 (202)	eP iS eL F	2 22 12 2 32 45 2 53 3 15				(202) $\Delta = 9500$ km.
July 22 (203)	eP eL F	7 13 31 7 19 7 45	+			(203) $\Delta$ about 2100 km. iS under paper-clamp.
July 22 (204)	e F	13 10 13 15				
July 23 (205)	eP iS eSS eL F	15 07 14 15 17 50 15 26 15 40 18 00	+			(205) $\Delta = 11500$ km (Java). JSA: $7^{\circ}$ S $111^{\circ},3$ E, H.O. = $14^{\text{h}}53^{\text{m}}23^{\text{s}}$ , h = 120 km. USCGS: $10^{\circ},5$ S $117^{\circ},5$ E.
July 23 (206)	iP eL	15 10 39 15 26				(206) $\Delta = 5500$ km?
July 24 (207)	e F	1 48 2 00				
July 24 (208)	e M F	16 05 16 15 16 30				

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
July 28 (209)	eL F	4 38 5 00				
July 28 (210)	eL F	17 49 18 00				
July 29 (211)	iP iPP iS eSS iSSS eL ME ME Mz	3 12 50 3 15 40 3 21 31 3 25 30 3 29 00 3 32 3 35 3 41 3 41	(+)			(211) $\Delta = 7200$ km, off Porto Rico. USCGS: $18^{\circ},9$ N $67^{\circ},0$ W. F in the next earthquake.
July 29 (212)	eL MH F	8 05 8 09 9 00		22	5	
July 29 (213)	iP eS eLN eLE ME F	11 53 28 12 02 00 12 11 12 14 12 17 13 10		22	8	(213) Aftershock of (211).
July 29 (214)	e F	17 25 17 30				
July 30 (215)	iP iS eSS eLN eLE ME ME Mz F	1 13 06 1 21 45 1 25 55 1 30 1 32 1 34 1 38 1 38 3 20	(+)			(215) Aftershock of (211).
July 30 (216)	eL F	4 55 5 10				
July 31 (217)	eP eLN eLz Mz	3 32 45 3 50 3 54 3 56				(217) Aftershock of (211). F in the next earthquake.
July 31 (218)	e M F	4 44 4 45 4 50		21	5	

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
July 31 (219)	eL MEZ F	20 33 20 38 21 05		20	2	
Aug. 1 (220)	eL F	1 44 1 50				
Aug. 1 (221)	eL MEZ F	15 05 15 21 15 40		18	2	
Aug. 1 (222)	iPKP ipPKP iPP iPPP iH eL F	16 37 59 16 38 55 16 41 16 16 44 38 16 47 55 17 55 18 30	(+)			(222) Pasadena: $20^{\circ}$ S $170^{\circ}$ E, H.O. = $16^h18^m41^s$ , $h = 230$ km.
Aug. 2 (223)	iP1' iP2' ePP ePPP iE iSS eSSS e(L) MN F	1 06 39 1 07 43 1 11 28 1 15 40 1 21 57 1 32 10 1 38 1 54 2 19 4 0	(+)			(223) $\Delta = 18600$ km. Wellington: $45^{\circ},5$ S $166^{\circ},8$ E.
Aug. 2 (224)	eL F	9 50 10 10				
Aug. 2 (225)	eL F	12 39 12 55				
Aug. 4 (226)	eL F	1 29 1 40				
Aug. 8 (227)	eL F	1 09 1 30				
Aug. 9 (228)	eL F	17 52 18 35				
Aug. 10 (229)	e(PP) ez iE eL F	14 08 16 14 09 20 14 14 54 14 43 15 25		25	15	(229) $\Delta =$ about $13000$ km?

Date 1943	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
Aug. 10 (230)	iP	15	24	41	+			(230) $\Delta = 8000$ km, $h = 75$ km. Pasadena: $56^\circ$ N $162^\circ,5$ E, H.O. = $15^h13^m23^s$
	ipP	15	24	58				
	iPP	15	27	22				
	ipPP	15	27	40				
	ePPP	15	29	10				
	iS	15	34	20				
	isS	15	34	40				
	eL	15	45					
F	18	10						
Aug. 11 (231)	eL	6	18					
	F	6	25					
Aug. 12 (232)	eL	5	31					(232) No Z-record.
	F	6	30					
Aug. 12 (233)	e	11	10					
	F	11	20					
Aug. 13 (234)	eH	7	55	20				
	eL	8	05					
	ME	8	07					
	F	8	40					
Aug. 15 (235)	eL	0	41					
	ME	0	48					
	F	1	30					
Aug. 15 (236)	eL	3	20					
	ME	3	26					
	F	3	55					
Aug. 17 (237)	iz	9	22	38				
	eL	9	58					
	F	10	25					
Aug. 17 (238)	eL	14	35					
	F	15	15					
Aug. 17 (239)	ez	15	32	35				
	F	16	40					
Aug. 20 (240)	eP	1	35	52				(240) $\Delta = 11500$ km.
	ePP	1	40	00				
	eSKS	1	46	40				
	ePS	1	49	00				
	eL	2	10					
	F	4	00					

Date 1943	Phase	Time			Direction	Period	Amplitude	Remarks
		h	m	s				
Aug. 21 (241)	eL	10	15					
	F	10	20					
Aug. 21 (242)	eL	20	37					
	F	20	50					
Aug. 22 (243)	eL	2	06					
	F	2	25					
Aug. 22 (244)	e	11	42					
	F	12	00					
Aug. 23 (245)	eL	8	45					
	F	9	20					
Aug. 24 (246)	e	17	54					
	F	18	50					
Aug. 27 (247)	ez	1	01	42				
	eL	2	06					
	Mz	2	10					
	F	3	15					
Aug. 27 (248)	e	8	03					
	F	8	15					
Aug. 27 (249)	e	15	02					
	F	15	10					
Aug. 31 (250)	eL	0	30					
	M	0	45					
	F	1	10					
Aug. 31 (251)	eL	15	51					(251) F in the next earthquake.
	Mez	15	55					
Aug. 31 (252)	iP	16	23	05				(252) $\Delta = 9000$ km. Pasadena: $14^\circ,2$ N $91^\circ,5$ W H.O. = $16^h10^m40^s$ , $h = 80$ km.
	eS	16	33	10				
	eSS	16	38	30				
	eL	16	49					
	Mez	16	52					
	F	17	20					
Aug. 31 (253)	e	18	13					
	F	18	16					
Sept. 4 (254)	e	12	35					
	F	12	38					



Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s		s	$\mu$	
Sept. 5 (255)	(eP) iPP iSKS iS iPS iPPS eSS eSSS eL F	8 48 50 8 53 20 8 59 20 9 00 45 9 02 15 9 03 15 9 08 9 12 9 23 11 20	(-)			(255) $\Delta = 12000$ km. USCGS: $0^{\circ}$ N $125^{\circ}$ E, North Celebes. Pasadena: $4^{\circ}$ N $123^{\circ}$ E, H.O. = $8^{h}34^{m}17^{s}$ .
Sept. 6 (256)	iPKP iPP iSS F	4 01 30 4 05 20 4 26 50 9 00	+			(256) USCGS: $53^{\circ},2$ S $159^{\circ},4$ E, H.O. = $03^{h}41^{m}15^{s}$ , Auckland Isl.
Sept. 6 (257)	eL F	13 45 13 55				
Sept. 6 (258)	eL F	16 43 17 00				
Sept. 7 (259)	eL F	19 59 20 08				
Sept. 8 (260)	e eL F	18 00 18 06 18 20				
Sept. 9 (261)	iP ipP iz iS isS eL F	4 14 38 4 15 20 4 15 40 4 21 24 4 22 48 4 25 4 50	-			(261) $\Delta = 5200$ km, h = 200 km. Hindu Kush.
Sept. 10 (262)	eL Me F	3 00 3 04 3 30		23	4	(262) USCGS: $18^{\circ},9$ N $67^{\circ},0$ W H.O. = $02^{h}31^{m},6^{s}$ .
Sept. 10 (263)	iP iS iSS eSSS eL F	8 49 18 8 59 32 9 05 9 10 9 14 13 00				(263) USCGS: $35^{\circ},1$ N $133^{\circ},3$ E H.O. = $08^{h}36^{m},9^{s}$ . Destructive at Tottori, Japan.
Sept. 10 (264)	eL F	14 20 14 40				

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s		s	$\mu$	
Sept. 11 (265)	eL MN F	1 58 2 05 2 35		15	8	
Sept. 11 (266)	ePKP iSS eL F	19 53 43 20 15 29 20 40 22 10				(266) USCGS: $16^{\circ},5$ S $173^{\circ}$ W, H.O. = $19^{h}34^{m}51^{s}$ .
Sept. 12 (267)	iPP iSKS eSS eSSS eL F	1 49 46 1 55 48 2 04 30 2 08 30 2 23 3 10				(267) $\Delta = 12000$ km. Pasadena: East Indies.
Sept. 13 (268) 14	e F	23 34 0 40				
Sept. 14 (269)	iPKP iSS eL	2 20 59 2 43 56 3 11	+			(269) Pasadena: $22^{\circ}$ S $171^{\circ}$ E, H.O. = $02^{h}01^{m}12^{s}$ , h = 50 km. F in the next earthquake.
Sept. 14 (270)	ePKP iz iz ePP eL MN F	4 06 57 4 07 02 4 08 01 4 10 30 4 49 5 08 7 30	- +		25 60	(270) Pasadena: $22^{\circ}$ S $170^{\circ}$ E, H.O. = $03^{h}47^{m}15^{s}$ , h = 50 km.
Sept. 14 (271)	ePKP ePP eSS F	7 38 00 7 42 00 8 02 30 11 30	+			(271) Pasadena: $30^{\circ}$ S $177^{\circ}$ W, H.O. = $07^{h}18^{m}08^{s}$ .
Sept. 14 (272)	eZ eZ eL F	14 17 01 14 25 31 15 22 16 20				
Sept. 16 (273)	iE eL F	0 39 07 1 40 2 30				
Sept. 16 (274)	e F	14 30 15 00				
Sept. 17 (275)	eZ eL F	0 00 17 1 00 1 15				

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
Sept. 17 (276)	eZ	4 42 36				
	eZ	4 43 50				
	eL	5 43				
	F	6 15				
Sept. 17 (277)	iPKP	10 28 46			(277) Pasadena: approximately 16° S 170° E, H.O. = 10 <sup>h</sup> 09 <sup>m</sup> 35 <sup>s</sup> .	
	iPP	10 32 15				
	iPPP	10 35 21				
	F	12 00				
Sept. 17 (278)	eL	15 10				
	F	15 35				
Sept. 18 (279)	eL	21 00				
	F	21 15				
Sept. 19 (280)	eH	5 27				
	eL	5 50				
	F	8 00				
Sept. 20 (281)	eL	1 30				
	F	2 05				
Sept. 22 (282)	ePKP	23 38 20	+		(282) $\Delta = 18500$ km. Pasadena: 34° S 179° W, H.O. = 23 <sup>h</sup> 18 <sup>m</sup> 15 <sup>s</sup> .	
	ePP	23 43 10				
	iSS	0 03 20				
	eL	0 35				
	F	2 30				
Sept. 23 (283)	iP	15 12 57	+		(283) $\Delta = 9000$ km. USCGS: 15° N 92° W, H.O. = 15 <sup>h</sup> 00 <sup>m</sup> 30 <sup>s</sup> .	
	iP	15 13 27	-			
	eS	15 23 04				
	eSS	15 28 30				
	F	16 30				
Sept. 24 (284)	e	4 20				
	F	4 50				
Sept. 24 (285)	F	7 25			(285) Beginning during change of papers.	
Sept. 24 (286)	iP	11 40 17	+		(286) $\Delta = 5650$ km. Pasadena: Deep? Northern India.	
	iPP	11 42 12				
	iS	11 47 26				
	iSS	11 51 10				
	eL	11 57				
	F	12 30				

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
Sept. 26 (287)	eH	2 40 10				
	eL	2 57				
	MH	3 00		30		4
	F	3 35				
Sept. 26 (288)	e	4 20				
	F	4 50				
Sept. 26 (289)	e	14 04				
	F	14 30				
Sept. 26 (290)	e	18 48				
	F	19 30				
Sept. 27 (291)	iPKP	22 23 34	+		(291) $\Delta = 17500$ km. Pasadena: near 30° S 176° W, H.O. = 22 <sup>h</sup> 3,8 <sup>m</sup> , h = 70 km.	
	iPP	22 27 45	+			
	eL	23 19				
„ 28	F	0 40				
Sept. 28 (292)	eL	11 37			(292) Strong microseisms.	
	F	12 15				
Sept. 29 (293)	eL	5 39				
	F	5 55				
Sept. 29 (294)	e	10 39				
	F	11 00				
Sept. 30 (295)	e	8 22				
	F	8 45				
Oct. 1 (296)	e	7 00				
	F	7 10				
Oct. 1 (297)	iP	18 02 49			(297) $\Delta = 6200$ km. Pasadena: Atlantic. Very roughly 7° N 37° W.	
	iS	18 10 44				
	iz	18 10 50				
	eL	18 19				
	F	19 15				
Oct. 2 (298)	eL	8 44				
	F	9 10				
Oct. 3 (299)	iP	0 58 28			(299) $\Delta = 2800$ km.	
	iS	1 02 58				
	eL	1 05				
	F	1 45				
Oct. 3 (300)	e	8 34				
	ME	8 35 30		16		25
	F	9 00				

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
Oct. 3 (301)	eL F	20 15 21 00				
Oct. 4 (302)	ePKP ePP eL F	10 59 14 11 02 20 11 47 12 25				(302) Pasadena: roughly 15°,5 S 168° E, H.O. = 10 <sup>h</sup> 39.1 <sup>m</sup> .
Oct. 5 (303)	eL F	11 38 11 47				
Oct. 7 (304)	eL F	12 00 12 15				
Oct. 9 (305)	eL F	10 33 10 50				
Oct. 10 (306)	eL M F	1 12 1 14 1 25				
Oct. 12 (307)	e F	5 28 5 40				
Oct. 13 (308)	eL F	5 24 5 45				
Oct. 13 (309)	e F	6 28 6 45				
Oct. 15 (310)	e F	23 00 23 30				
Oct. 16 (311)	e F	1 30 2 00				
Oct. 16 (312)	e F	10 35 10 45				
Oct. 16 (313)	iP iS eL F	13 13 47 13 17 50 13 20 13 45	+			(313) Δ = 2450 km.
Oct. 16 (314)	e F	19 22 19 30				
Oct. 17 (315) 18	eL F	23 37 0 30				

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
Oct. 18 (316)	e F	14 08 14 25				
Oct. 19 (317)	e F	1 57 2 15				
Oct. 21 (318)	ePKP ePP eSS	23 27 48 23 31 00 23 49 30				(318) Δ = 16000 km. JSA: 16°,5 S 177°,4 W, H.O. = 23 <sup>h</sup> 08 <sup>m</sup> 08 <sup>s</sup> .
" 22	eL F	0 15 2 00		35	20	
Oct. 22 (319)	iP iPP eS eL F	16 14 01 16 17 25 16 24 40 16 44 17 45	— —			(319) Δ = 9500 km.
Oct. 23 (320)	iP iS iSS iSSS eL ME F	17 34 23 17 43 24 17 47 30 17 51 20 17 57 18 07 21 00	+		28 350	(320) USCGS: 25° N 92°,5 E, H.O. = 17 <sup>h</sup> 23,3 <sup>m</sup> , m = 7. Region of Assam.
Oct. 23 (321)	e F	22 00 22 10				
Oct. 24 (322)	iP eS eLN F	13 52 14 14 01 52 14 19 15 00		33	5	(322) Pasadena: 50° N 154° E, Kurile Isl. H.O. 13 <sup>h</sup> 40 <sup>m</sup> 18 <sup>s</sup> .
Oct. 24 (323)	iPKP iPP eL F	16 24 25 16 28 04 17 17 19 30	— —			(323) Δ = 16700 km. Pasadena: 22° S 174° W, H.O. = 16 <sup>h</sup> 04 <sup>m</sup> 36 <sup>s</sup> , m = 7.
Oct. 24 (324)	iP eS eL ME F	23 34 21 23 43 44 0 01 0 04 0 40	+		27 2	(324) Δ = 8000 km. Pasadena: roughly 55° N 160° E. H.O. = 23 <sup>h</sup> 22,8 <sup>m</sup> , Kamchatka.
Oct. 26 (325)	e F	5 33 5 45				

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
Oct. 27 (326)	eP	16 24 05				(326) $\Delta = 9800$ km.
	eS	16 34 50				
	eL	16 55				
	MH	17 00		25	6	
	Mz	17 08		13	10	
	F	17 45				
Nov. 1 (327)	e	20 42				
	F	20 46				
Nov. 2 (328)	eE	3 58 00				
	eN	4 04 40				
	F	4 30				
Nov. 2 (329)	e	7 25				
	F	7 40				
Nov. 2 (330)	eL	17 39				
	F	18 05				
Nov. 2 (331)	eP	18 23 10				(331) $\Delta = 12800$ km. Pasadena: roughly $58^\circ$ S $25^\circ$ W, Sandwich Isl. H.O. = $18^{\text{h}}08^{\text{m}}24^{\text{s}}$ .
	iPP	18 27 45	+			
	iSKS	18 33 50				
	iS	18 35 40				
	iPS	18 37 20				
	iSS	18 43 40				
	eL	19 00				
	F	22 30				
Nov. 3 (332)	iP	14 42 58	+			(332) $\Delta = 7200$ km, Alaska. USCGS: $62^\circ$ N $151^\circ$ W, H.O. = $14^{\text{h}}32,3^{\text{m}}$ .
	iS	14 51 42				
	iSS	14 56 25				
	eL	15 03				
	F	19 30				
Nov. 3 (333)	eL	22 52				
	F	23 05				
Nov. 4 (334)	e	5 12				
	F	5 15				
Nov. 4 (335)	e	6 43				
	eL	7 40				
	MN	7 47		20	7	
	F	9 30				
Nov. 4 (336)	eL	16 03				
	F	16 15				

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
Nov. 5 (337)	iP	10 36 57	(+)			(337) $\Delta = 2200$ km.
	eS	10 40 42				
	eL	10 42 30				
	M	10 47		14	6	
	F	11 15				
Nov. 5 (338)	e	15 56				
	F	16 05				
Nov. 6 (339)	eL	7 31				
	F	8 30				
Nov. 6 (340)	eP	8 46 50				(340) USCGS: $5^\circ,5$ S $134^\circ$ E, H.O. = $8^{\text{h}}31,6^{\text{m}}$ .
	ePKP	8 50 20				
	iPP	8 51 50				
	iSKS	8 57 24				
	F	14 00				
Nov. 7 (341)	e	7 30				
	F	7 40				
Nov. 7 (342)	eL	9 11				(342) Disturbed by microseisms.
	MN	9 14		20	14	
	Mz	9 21		14	20	
	F	9 45				
Nov. 8 (343)	iP	7 05 20	(+)			(343) Change of papers $7^{\text{h}}06^{\text{m}}$ till $7^{\text{h}}16^{\text{m}}$ . Pasadena: $81^\circ$ N $2^\circ,5$ E H.O. = $6^{\text{h}}59^{\text{m}}18^{\text{s}}$ .
	F	8 15				
Nov. 8 (344)	eL	23 33				
	M	23 45		21	4	
	F	24 00				
Nov. 9 (345)	iP	11 58 31	+			(345) $\Delta = 8700$ km. Pasadena: $44^\circ$ N $148^\circ$ E, H.O. = $11^{\text{h}}46^{\text{m}}30^{\text{s}}$ .
	iS	12 08 25				
	eL	12 25				
	ME	12 28		32	6	
	F	13 00				
Nov. 13 (346)	eL	11 40				
	F	12 00				
Nov. 13 (347)	eL	17 57				
	F	18 40				
Nov. 13 (348)	iPKP	19 03 36	+			(348) Disturbed by microseisms. Pasadena: $20^\circ$ S $170^\circ$ E, H.O. = $18^{\text{h}}43^{\text{m}}59^{\text{s}}$ .
	ePP	19 07 10				
	eL	19 53				
	F	21 00				

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
Nov. 15 (349)	e F	11 55 12 05				
Nov. 16 (350)	e eL M F	7 20 7 22 7 24 7 30		13	6	
Nov. 16 (351)	ePP ePS eSS eL M F	11 55 18 12 04 12 09 12 19 12 30 13 00		22	8	(351) $\Delta = 10500$ km. Pasadena: $15^\circ$ S $74^\circ$ W, H.O. = $11^h37^m55^s$ .
Nov. 16 (352)	e F	17 57 18 03				
Nov. 17 (353)	e F	12 36 12 45				
Nov. 17 (354)	iS ie eH eL F	15 19 14 15 19 26 15 25 15 40 16 15				(354) Deeper than normal. Pasadena: $34^\circ$ N $138^\circ$ E, H.O. = $14^h57,3^m$ .
Nov. 18 (355)	e F	12 17 12 25				
Nov. 18 (356)	eL F	19 50 20 10				
Nov. 19 (357)	e F	3 27 3 33				
Nov. 20 (358)	eL F	8 28 8 45				
Nov. 20 (359)	iP ez iS eL Mz F	10 06 57 10 08 54 10 11 04 10 14 10 17 10 45	+			(359) $\Delta = 2550$ km.
Nov. 20 (360)	eL F	19 48 21 15				

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
Nov. 21 (361)	eL M F	20 25 20 35 21 00				
Nov. 21 (362)	e F	22 28 22 35				
Nov. 23 (363)	eL F	22 30 23 00				
Nov. 24 (364)	eP eS eL MN F	13 30 00 13 40 40 13 57 14 16 15 00		20	200	(364) $\Delta = 9500$ km. Disturbed by micro-seisms.
Nov. 26 (365)	iH iH	21 48 51 21 49 30				(365) F in the next earthquake.
Nov. 26 (366)	iP iS F	22 25 42 22 30 00 3 00	—			(366) Extraordinarily strong earthquake from region of Tschorum (coast of Black Sea). iS after Wiechert seismograph. Galitzin records not to be disentangled.
Nov. 27 (367)	eL F	9 10 9 40				
Nov. 27 (368)	e F	10 25 10 35				
Nov. 28 (369)	eH eL M F	6 44 30 7 09 7 15 8 05				
Nov. 28 (370)	eL ME F	17 45 17 51 19 20		25	40	
Nov. 29 (371)	e F	2 09 2 15				(372) Strong microseisms.
Nov. 29 (372)	eL F	18 59 19 10				(373) Strong microseisms.
Nov. 29 (373)	eL F	20 32 20 55				(374) Strong microseisms.
Nov. 29 (374)	e F	21 58 22 45				(375) $\Delta = 13300$ km. Change of papers $6^h48^m$ till $6^h58^m$ . Pasadena: $4^\circ,8$ S $144^\circ$ E, H.O. $6^h04^m55^s$ , h = 120 km.
Dec. 1 (375)	ePKP iPP iPPP ePS eSS F	6 23 43 6 25 04 6 27 41 6 35 6 42 8 30	— —			

Date 1943	Phase	Time h m s	Direction	Period s	Amplitude $\mu$	Remarks
Dec. 1 (376)	iP iPP iSKS eL ME F	10 48 13 10 51 59 10 58 38 11 15 11 24 13 30	-			(376) $\Delta = 10500$ km. Pasadena: $19^{\circ}5'S$ $69^{\circ}8'W$ , H.O. = $10^h34^m46^s$ , $h = 80$ km.
Dec. 2 (377)	iPKP ePP ePSKS ePPS eL M F	2 14 04 2 18 14 2 28 30 2 31 35 3 10 3 22 4 15	-			(377) $\Delta = 17700$ km. Pasadena: $30^{\circ}S$ $178^{\circ}W$ roughly.
Dec. 2 (378)	iP iPP eS eL MH F	5 21 46 5 25 11 5 32 14 5 48 5 57 8 00	+			(378) $\Delta = 9500$ km. Pasadena: $24^{\circ}N$ $122^{\circ}E$ , H.O. = $5^h08^m55^s$ .
Dec. 2 (379)	eL MH F	7 24 7 26 7 45		21	4	
Dec. 3 (380)	iPP iPS eSS eL MH	4 58 12 5 08 15 5 15 00 5 27 5 33				(380) $\Delta = 13000$ km, F in the next earthquake. Pasadena: $3^{\circ}S$ $141^{\circ}E$ , H.O. = $4^h38^m08^s$ .
Dec. 3 (381)	iP iS eL MH F	7 04 52 7 14 50 7 32 7 36 8 15		30	16	(381) $\Delta = 9000$ km. Pasadena: roughly $42^{\circ}N$ $143^{\circ}E$ . H.O. = $6^h52^m50^s$ .
Dec. 3 (382)	eL F	8 43 8 50				
Dec. 5 (383)	iP e(pP) iz e(S) e(sS) F	3 24 38 3 25 51 3 26 32 3 31 20 3 32 40 3 55	+			(383) $\Delta = 5000$ km? Deeper than normal, $h = 200$ km?
Dec. 5 (384)	eL MH F	22 25 22 26 22 45		20	3	
Dec. 6 (385)	eL	6 56				(385) F during change of papers $7^h01^m$ till $7^h11^m$ .

Date 1943	Phase	Time h m s	Direction	Period s	Amplitude $\mu$	Remarks
Dec. 7 (386)	iP iS eL ME F	1 19 45 1 30 11 1 46 1 48 2 10				(386) $\Delta = 9400$ km. Pasadena: South Mexico.
Dec. 8 (387)	iP iS eL ME Mz F	19 51 26 20 01 52 20 19 20 28 20 28 21 15	+			(387) $\Delta = 9400$ km. Pasadena: Mexico.
Dec. 9 (388)	e F	3 55 4 30				
Dec. 12 (389)	e e F	16 10 16 13 30 16 40				
Dec. 13 (390)	eL MH F	16 42 16 49 17 20		23	12	
Dec. 17 (391)	eLH eLz F	14 40 14 46 15 10				(391) Disturbed by microseisms.
Dec. 21 (392)	iP iS eL ME MH Mz F	13 57 48 14 07 06 14 16 14 21 14 30 14 30 15 00	-			(392) $\Delta = 7900$ km. Microseisms. USCGS: $13^{\circ}N$ $70^{\circ}5'W$ , H.O. = $13^h46.4^m$ .
Dec. 22 (393)	e F	7 25 7 30				
Dec. 22 (394)	eE eL ME MH Mz F	13 14 40 13 23 13 30 13 36 13 36 14 30				(394) Pasadena: Colombia or Ecuador.
Dec. 23 (395)	iP iS eSS eL MN ME Mz F	16 07 30 16 16 51 16 21 30 16 26 16 28 16 32 16 32 17 30	-			(395) $\Delta = 8000$ km. USCGS: $13^{\circ}3'N$ $70^{\circ}4'W$ , H.O. = $15^h56^m00^s$ .

Date 1943	Phase	Time	Direction	Period	Amplitude	Remarks
		h m s		s	$\mu$	
Dec. 23 (396)	iPKP iPP iSKP iPS eSS eL ME F	19 19 18 19 21 16 19 22 40 19 30 50 19 39 30 19 55 20 00 23 00	— +			(396) $\Delta = 14000$ km. Pasadena: $5^{\circ},5$ S $153^{\circ},5$ E, H.O. = $19^{\text{h}}00^{\text{m}}10^{\text{s}}$ . JSA: $6^{\circ},1$ S $154^{\circ},6$ E, H.O. = $19^{\text{h}}00^{\text{m}}14^{\text{s}}$ .
Dec. 24 (397)	eL F	1 30 2 00				
Dec. 24 (398)	eL ME F	2 45 2 48 4 00		35	17	(398) Pasadena: $6^{\circ}$ S $156^{\circ}$ E, H.O. = $1^{\text{h}}48^{\text{m}}09^{\text{s}}$ .
Dec. 24 (399)	eL F	6 08 6 30				
Dec. 24 (400)	eL F	12 43 13 50				(400) Pasadena: $5^{\circ}$ S $155^{\circ}$ E, H.O. = $11^{\text{h}}44^{\text{m}}30^{\text{s}}$ .
Dec. 25 (401)	eL F	5 31 6 45				
Dec. 25 (402)	eL F	8 55 9 30				(402) Pasadena: $22^{\circ}$ N $109^{\circ}$ W, H.O. = $8^{\text{h}}17,5^{\text{m}}$ .
Dec. 25 (403)	eL F	12 17 12 25				
Dec. 27 (404)	e F	1 15 1 20				
Dec. 27 (405)	eL F	5 20 6 05				
Dec. 29 (406)	e F	13 30 13 45				
Dec. 30 (407)	eL F	7 25 8 30				
Dec. 30 (408)	e ME F	9 00 9 13 9 55		18	5	
Dec. 30 (409)	eH eH eL ME Mz F	22 34 22 41 23 00 23 17 23 17 24 00		22 22	25 18	(409) Disturbed by microseims. Pasadena: New Britain?