



M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY

$\phi=14^{\circ} 34' 42''$ N.

$\lambda=120^{\circ} 58' 41''$ E.

$h=3$ m.

Alluvium

CONSTANTS OF THE GALITZIN-WILIP

	T_0	D	T_1	l
N-S	12.4	100.5	12.6	11.5
E-W	11.8	100.5	11.9	11.4
Z	11.6	100.5	9.0	14.8

CONSTANTS OF THE WIECHERT INVERTED PENDULUM. $M=955$ Kg.
January 1, 1936.

	T_0	V	ϵ	$\frac{r}{T_0^2}$
N-S	4.0	210	2.6	0.055
E-W	5.1	188	2.9	0.035

No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
1936 Jan. No. 5 2nd	$\overline{1}$ PNEZ SNEZ F	17 06 45 07 03 14	145	
6 2nd	$\overline{1}$ PNEZ SNE F	17 31 59 35 50 18 45	2355	Compression. In vicinity of 1° S; 134° E by Riverview, Manila, Chiufeng.
7 2nd 3rd	$\overline{1}$ PZ SNE LNE MN F	22 40 02 44 56 48 38ca 51 ca 0 47	3350	Compression. Approx. 1° S; 97° E by Phu-Lien, Manila, Hong Kong, Chiufeng.
10 6th	\overline{e} PNEZ $\overline{1}$ SNEZ F	3 25 47 27 15 5 10	810	Registered at Butuan.
16 9th	PNE SN LN F	23 19 03 22 53 25 12 56	2390	
20 11th	$\overline{1}$ PNEZ SNE F	18 25 22 34 33	95	
22 12th	PNEZ SNE F	9 04 09 08 34 25	2890	
24 13th	PNE SNE LNE F	4 44 32 47 28 48 52 5 15	1700	
25 13th	PNE S?NE LE F	18 18 28 24 20 29 35ca 19 20	4265?	

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



No. and Date	Phase.	Greenwich Time			Dist. Kg.	Remarks
		h.	m.	s.		
1936 Jan.						
27 14th	1PNZ SNE LN MN F	5 6 07 10 8	57 02 07 05 25	26 56 ca ca	3910	Dilatation. Probably east of Japan by Chiufeng, Nanking, Manila.
28 14th	PNEZ SNE MNE F	12 26 32 13	22 51 05ca 30	40	2700	
29 14th	1PZ 1PE LN F	14 16	31 48	19 20 26	18380	Dilatation. Region of 28°S; 53°W by U.S.C.G.S.
30 14th	PNEZ SNE LN LN F	17 18 19	50 59 06 45	54 ca ca	6555	Compression. 20°S; 170°E by Riverview, Adelaide, Manila, Nanking, Chiufeng, Hong Kong.
33 15th	1PEZ 1PN 1SNE LNE F	14 15 16	53 02 12 40	48 50 06 41	6755	Dilatation(?). In vicinity of New Caledonia by River- view, Manila, Nanking, Chiufeng.
34 15th	1PEZ SNE F	16 17	48 48	40 42	6490	
36 16th	1PZ 1SNE LNE F	18 19	41 47	44 33 40	2365	Dilatation.
37 16th	PNE SE F	23	12 13	12 07 24	450	
41 20th	1PNEZ SNE F	16 17 19	58 01 16	51 03	1290	Compression from Southeast. Felt in eastern and southern Mindanao. Epicenter probably in Philippine Deep. S from the Wiechert and Horizontal Pen- dulums. Baguio, 1490 Km.
47 22nd	1PNEZ SNE F	21	06 19	29 55	200	Compression. Deep focus. Felt in Manila and at Candelaria, Zambales. Baguio, 250 Km.
50 23rd	1PZ SNE F	17	32 38	09 25	125	Dilatation.

No. 3,

January, 1936.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY. -- Continued.

No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
1936 Jan, 51 24th	PNEZ SNE L?NE F	16 52 54 57 40 17 01 ca 30	3210	
53 27th	P?NEZ S?NEZ MNE F	19 38 06 43 55 51 42 20 30	4220?	
56 29th 30th	PNEZ SNE F	23 53 39 54 49 0 24	620	Felt at Basco with intensity IV.
59 31st	PNEZ SNEZ LNE MN F	11 14 33 17 45 19 ca 21 ca 55	1900	

Thirty-five insignificant or undecipherable disturbances on the following days of January: 1st(3), 2nd, 3rd(2), 6th, 7th(2), 8th, 9th, 10th(3), 11th, 12th, 13th, 15th(2), 16th, 17th, 18th, 19th, 21st(3), 22nd(2), 23rd(2), 27th, 28th, 29th, and 31st(2).

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SEISMOLOGICAL BULLETIN OF THE OBSERVATORY

 $\phi=14^{\circ} 34' 42''$ N. $\lambda=120^{\circ} 58' 41''$ E.

h=3 m.

Alluvium.

CONSTANTS OF THE
GALITZIN-WILIP

	T_0	D	T_1	λ
N-S	12.4	100.5	12.6	11.5
E-W	11.8	100.5	11.9	11.4
Z	11.6	100.5	9.0	14.8

CONSTANTS OF THE WIECHERT
INVERTED PENDULUM. M=955 Kg.

February 1, 1936.

	T_0	V	ϵ	$\frac{r}{T_0^2}$
N-S	4.0	204	2.5	0.058
E-W	4.2	269	2.7	0.054

No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
1936 Feb. 66 4th	P?NEZ S?NE MNEZ F	12 32 48 38 48 47 ca 13 20	4390?	Disturbed by microseisms.
67 4th	PNEZ SEZ F	21 31 36 32 52 50	680	Felt at Gandara, Samar. Disturbed by microseisms.
68 6th	$\bar{1}$ PNEZ \bar{S} NE F	2 48 58 49 16 3 02	940	Felt in Manila by some persons. F in minute gap. \bar{S} from the Wiechert.
69 6th	P?NE SNE ME F	4 10 15 15 09 21 40 ca 5 20	3345?	
70 6th	PNE \bar{S} NE F	17 17 38 18 04 23	200	
71 6th	PEZ SE LN F	20 54 51 57 38 59 ca 21 35	1600	
74 7th	$\bar{1}$ PNEZ $\bar{1}$ SNE MNE F	9 02 04 06 53 12 40 ca 11 30	3255	Compression. In vicinity of 32° N; 102° E by Zikawei, Hong Kong, Manila. Heavy damage at Lanchow, Kansu. Data after P from the Wiechert.
75 8th	PEZ SEZ	12 04 00 05 08	600	
76 8th	PE SE LNE F	12 18 00 22 23 25 ca 13 50	2865	No. 75 still recording.



M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No. and Date	Phase.	Greenwich Time			Dist. Km.	Remarks
		h.	m.	s.		
1936 Feb. 77 9th	P?NEZ SNE LN MN F	4	36	37 50 30ca ca 25	3635?	Disturbed by microseisms.
79 10th	PNEZ SNE F	15	19	14 34 40	720	
80 10th	1PEZ SNE LNE F	18	15	49 44 ca 40	2470	Dilatation.
81 12th	1PEZ 1SNEZ F	9	38	44 16 36	1465	Dilatation. Deeper than normal. N.E.I.
84 14th 15th	1PZ 1SNZ F	23	11	10 21 10	2700	Deep focus. <i>cylinder</i> The E-W cylinder stopped at 16:59.
86 15th	1PE 1PZ 1PN 1SNE LNE MNE F	12	51	57 58 59 04 30ca 20 10	2635	Compression from SE. Prob. 6°S; 132°E by U.S.C.G.S. Bagulo, 2725 Km. Data after P from the Wiechert.
87 16th	1PEZ SNEZ F	12	32	40 58 41	145	
88 16th	PNEZ S?NE ME F	14	26	42 42 ca 30	5265	Probably in Solomon Islands by Mailla, Nanking, Chiufeng.
91 18th	PNEZ SNE LNE MNE F	14	39	54 39 35ca ca 40	4145	



M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
1936 Feb. 95	PNEZ	8 18 46	3120	
19th	SN	23 26		
	F	9 06		
98	PNE	23 36 36	1467	Felt at Glan, Cotabato.
20th	SNE	39 08		
21st	F	0 02		
99	ePNEZ	1 13 14	2855	Japan.
21st	iSNE	17 36		Damage in Osaka.
	LNE	20 40 ca		
	ME	22 40 ca		
	F	2 20		
100	PEZ	6 26 08	2865	Aftershock of No. 99.
21st	SE	30 31		The N-S record defective.
	LEZ	33 14		
	MEZ	35 18		
	F	7 55		
102	PEZ	17 03 24	3180	In the ^{Tinian} Tinner Sea by Manila, Hong Kong, Nanking.
21st	iE	05 42		
	SE	08 17		
	LE	10 30 ca		
	F	19 10		
107	PNEZ	15 43 33	8200	Compression.
22nd	SNE	53 14		
	F	19 08		
108	PNEZ	19 34 27	7980	
22nd	SNEZ	43 55		
	LNE	56 45		
	MNE	20 03 20 ca		
	F	22 30		
109	PNEZ	12 28 39	1710	
23rd	SNE	31 36		
	LNE	33 ca		
	MNE	34 50 ca		
	F	13 30		
111	PNEZ	18 49 31	1800	
23rd	SNEZ	52 35		
	F	19 20		



M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
1936 Feb. 112 24th	PNEZ SNEZ MNE F	7 06 25 10 30 15 10ca 45	2610	
117 26th	PNEZ S?NE LNE ME F	2 47 02 53 00 58 25ca 3 01 39 30	4355?	
120 26th	1PNEZ 1SNE F	14 24 54 25 17 43	185	Compression from ESE. Felt in Manila and southeast Luzon.
121 27th	1PZ 1PNE 1SNE LE F	10 09 03 04 13 03 15 53 13 00	2420	Dilatation from SE. Probably western New Guinea by Manila, Hong Kong, Phu-Lien, Nanking, Chiufeng. Data after P from the Wiechert.
126 28th	1PEZ ePN 1NE 1SNE LN MNE F	16 20 16 16 19 24 22 26 42 28 55ca 17 52	2655	Dilatation.
130 29th	PNEZ SNE LNE F	20 35 07 39 23 42 30 21 25	2755	

Thirty-eight insignificant or undecipherable disturbances on the following days of February: 1st(4), 3rd(2), 7th(2), 9th, 12th, 14th, 15th, 17th(2), 18th(2), 19th, 20th(2), 21st(3), 22nd(2), 23rd, 24th(2), 25th(2), 26th(2), 27th(2), 28th(4), and 29th.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

International
Seismological
Centre $\phi = 14^{\circ} 34' 42''$ N. $\lambda = 120^{\circ} 58' 41''$ E.

h=3 m.

Alluvium.

CONSTANTS OF THE WIECHERT
INVERTED PENDULUM. M=955 Kg.CONSTANTS OF THE
GALITZIN-WILIP

March 1, 1936

	T_0	D	T_1	λ
N-S	12.4	100.5	12.6	11.5
E-W	11.8	100.5	11.9	11.4
Z	11.6	100.5	9.0	14.8

	T_0	V	ϵ	$\frac{F}{T_0^2}$
N-S	4.0	203	2.4	0.065
E-W	4.2	247	2.8	0.050

No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
132 1st	iPEZ iSNEZ iE iE iN F	10 29 01 34 20 38 13 46 39 47 36 12 35	3735	South end of Sakhalin Island by Chiufeng.
133 2nd	iPZ ePNE iSNEZ iNE MNE F	3 25 48 48 31 12 35 ca 38 30 ca 5 40	3810	Compression. Off Hakodate, Japan, by Zikawei, Manila, Phulien.
141 4th	iPZ iPE ePN iSNE iE F	6 34 47 48 48 38 51 43 30 7 15	2600	Compression. Deep focus.
144 5th 6th	iPNEZ SNEZ LN F	23 10 22 12 01 13 05 ca 0 45	930	Felt in NE Mindanao. Probably $8^{\circ} 20' N$; $126^{\circ} 55' E$. Butuan, 160 Km.
145 6th	iPZ ePNE iSNEZ F	6 00 23 23 49 20	200	Felt in Manila and at Botolan, Zambales. $15^{\circ} 57' N$; $119^{\circ} 42' E$ by Baguio and Manila.
146 6th	PNEZ S?NE L?NE F	14 37 01 42 22 46 37 15 38	3755?	P in minute gap.
148 8th	PNEZ SNEZ F	0 30 11 32 13 1 15	1180	Probably east of Formosa.
149 8th	PNEZ SNE iZ F	1 29 04 30 09 30 2 08	560	Compression. Felt in San Pablo, Isabela.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
1936 March 150 8th	1PZ PNE SNE F	9 37 26 28 39 49 10 15	1380	Recorded in Guam. Phases not discernible.
152 10th	PNEZ SNE LNE F	20 42 40 49 04 53 ca 21 50	3810	
154 11th	PNEZ SNE F	11 03 10 06 56 30	2320	
156 13th	PE SNE F	1 23 02 56 2 20	440	Felt at Viga, Catanduanes.
164 15th	PNEZ SNE F	19 32 36 33 36 50	510	Disturbed by microseisms.
168 17th	PNZ SE LNE MNE F	19 55 08 20 00 03 04 30ca 07 15 21 20	3360	
170 18th	1PEZ 1N SNEZ LN F	11 58 02 07 06 19 15 00ca 13 00	6745	Dilatation.
171 18th	PNZ SN LN MN F	13 46 54 51 48 54 10 56 40 14 43	3345	
173 18th	PNEZ SNEZ F	19 12 30 57 22	210	16° 20' N; 119° 57' E by Baguio and Manila. Felt at Aritao, N. Vizoaya.
174 18th	PNE SNEZ F	22 29 50 34 02 23 05	2710	
177 21st	P?NEZ SN LNE F	2 11 24 16 26 19 ca 56	3455?	No. 176 still recording.
180 21st	PNEZ SNE F	23 18 10 19 06 40	470	Felt at San Remigio, Antique.
181 22nd	1PEZ 1N 1E 1SNE LNE MNE F	12 24 01 07 27 01 30 30 36 25ca 40 40 14 20	4890	Compression from SE.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks
1936 March 182 23rd	•PNEZ SNE F	22 27 45 28 42 42	480	From the north. Recorded slightly in Baguio.
183 24th	PNEZ SNEZ F	17 20 07 22 10 18 18	1190	
185 24th	PNEZ SNEZ F	21 56 15 57 30 23 20	670	Compression. Probable epicenter, $11^{\circ} 15'$ N; $126^{\circ} 05'$ E as on May 24, 1935. Felt in northeast Mindanao. Compression from north at Butuan.
190 29th	PNZ SN F	6 09 16 13 26 53	2670	E-W cylinder stopped from 0:12 to 9:45.
192 31st	1PZ ePN SN F	3 37 46 46 41 38 4 30	2435	Compression. E-W driving clock being cleaned.
193 31st	PNE SNE F	7 08 10 22 In next	90	$15^{\circ} 35'$ N; $121^{\circ} 10'$ E by Manila and Baguio. Deeper than normal. Felt at Bongabon, Nueva Ecija.
194 31st	PNE SNE F	7 08 29 09 15 14	360	Z driving clock being cleaned.

Thirty-six insignificant or undecipherable disturbances on the following days of March: 1st, 2nd, 3rd(6), 4th, 5th, 7th, 10th, 11th(2), 13th(5), 14th(2), 17th(3), 18th(2), 21st(4), 24th(2), 25th, 27th, 28th, and 29th.

(non insere plans le Bull. International)

No. 21.



MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY

$\phi=14^{\circ} 34' 42''$ N.

$\lambda=120^{\circ} 58' 41''$ E.

h=3 m.

Alluvium.

CONSTANTS OF THE GALITZIN-WILIP

	T_0	D	T_1	l
N-S	12.4	100.5	12.6	11.5
E-W	11.8	100.5	11.9	11.4
Z	11.6	100.5	11.9	11.3

CONSTANTS OF THE WIECHERT INVERTED PENDULUM. M=955 Kg.
June 2, 1936.

	T_0	V	ϵ	$\frac{r}{T_0^2}$
N-S	4.1	203	2.5	0.067
E-W	4.3	255	3.0	0.062

No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks
1936 June				
405 1st	PNEZ S?E MN F	11 32 05 36 53 40 40ca 12 03	3245?	
406 2nd	P?NEZ S?NE MNE F	13 29 33 31 12 34 25ca 14 00	935?	Disturbed by microseisms.
407 2nd	PNE SNE F	18 17 45 18 49 32	420	
410 3rd	eEZ ENE F	9 37 13 42 20 11 05		Disturbed by microseisms. 40°N; 126°W by U.S.C.G.S.
415 4th	PZ SE F	13 15 33 20 30 14 00	3390	N component defective. Disturbed by microseisms.
417 5th	1PZ 1PNE 1SNE F	14 40 53 55 44 07 16 02	1865	Compression from SE. In vicinity of 7°N; 135°E by Butuan, Manila, Hong Kong Riverview.
421 7th	PNE SNE F	18 26 36 27 20 35	300	Felt in Legaspi with intensity III.
423 9th	1PZ 1PE SNE LNE MNE F	16 42 05 06 47 20 51 40ca 54 ca 18 05	3070	Compression. In vicinity of 3°S; 95°E by Manila, Hong Kong, Chiufeng.

M A N I L A , P . L .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No. and Date	Phase.	Greenwich Time			Dist. Km.	Remarks.
		h.	m.	s.		
1936 June 424 10th	PNEZ SNE ME F	3	46	25 52 30 4 03 40 ca 40	4480	
425 10th	1PEZ 1Z 1N 1SNE F	8	29	42 30 19 27 34 58 11 30	3680	Dilatation. 6°S; 144°E by Riverview, Manila, Taihoku, Chiufeng, Zikawei.
429 11th	PNE SNE LNE MN F	13	01	30 04 39 06 15 ca 08 ca 55	1845	
431 11th	PNEZ SNEZ MNE F	19	17	16 20 06 23 ca 40	1635	
436 13th	PNEZ SEZ F	8	57	43 9 02 28 40	3190	
437 13th	1PZ PN PE SNE F	12	20	55 58 21 00 25 20 13 15	2890	
438 13th	PNEZ SNEZ F	21	39	24 40 35 22 05	630	In the region of the Batan Islands.
443 15th	PNEZ SNEZ F	3	34	31 36 10 4 14	960	In the Philippine Deep, near 8° 15'N; 127°E by Butuan and Manila. Felt at Cantilan, Surigao.
444 15th	1PNEZ 1SNEZ F	10	05	26 45 35	150	Dilatation. Felt in Manila, intensity II. 15°N; 122° 20'E by Manila and Baguio.
446 15th	PNEZ SNEZ F	22	00	36 01 16 09	280	
447 16th	PNEZ S?NE MNE F	0	44	47 53 12 1 09 ca 55	6870?	

MANILA OBSERVATORY
SPECIAL BULLETIN OF PRINCIPAL EARTHQUAKES

JULY, 1936

✓ 4th	PNEZ SNEZ	9 03 08 07 28	
✓ 5th	1PNEZ SNE	18 57 47 19 00 09	Compression from SE. Felt in eastern and southern Mindanao and Sulu.
✓ 6th	PNEZ SNE	18 24 52 28 52	
✓ 11th	1PZ SNE	22 24 33 28 04	Dilatation.
✓ 12th	1PZ SNE	2 53 42 3 03 13	Compression.
✓ 13th	1PZ SKKS	11 32 20 43 46	Compression. Chile 26°S; 71°W tentative.
✓ 15th	PNEZ S?NE	11 55 45 12 00 18	
✓ 26th	1P: EZ 1SKKS	7 57 01 8 08 37	Compression. Phase at 8:06:27 extraordinarily large.
✓ 28th	PNEZ S?EZ	8 24 19 29 43	
✓ 28th	PZ SNE	7 58 31 8 03 40	

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



No. and Date	Phase.	Greenwich Time			Dist. Km.	Remarks.
		h.	m.	s.		
1936 June 448 16th	PZ S?N F	23	13	44	1350?	
452 17th	PEZ SNEZ F	12	45	28 46 47 13 50	720	
453 19th	PNEZ SNE F	14	19	32 20 24 25	350	
454 19th	PNEZ SN LN F	16	40	19 44 47 47 30ca 17 40	2936	
456 20th	PNEZ SNEZ LN MNE F	4	49	45 53 25 55 10ca 57 20ca 5 50	2235	Deep focus.
459 21st	PZ SNE SNEZ F	19	04	21 22 43 14	175	Dilatation from NE. Felt in Manila, intensity II. Felt in northern part of province of Nueva Ecija. 16° 05' N; 121° 30' E by Baguio and Manila.
461 22nd	PNEZ SNEZ F	16	26	56 27 20 38	190	
462 22nd	PNEZ SN F	19	45	52 48 55 20 30		
464 23rd	PNEZ SNEZ F	1	29	55 34 07 52	2710	Deep focus. Dilatation.
465 23rd	PNEZ SNE F	3	37	30 49 42	150	
468 23rd	PZ SNE SNEZ F	23	20	09 09 29 38	160	Compression.
469 25th	PNEZ SNZ F	16	56	27 17 01 55 27	3820	32° N; 145° E by Manila, Chiufeng, Taihoku, Hong Kong.
470 27th	PNEZ SNE F	5	23	25 42 31	135	

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

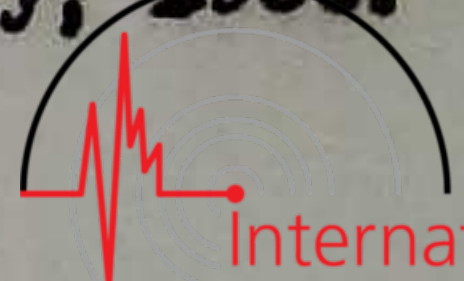


No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
1936 June				
471 27th	PNEZ SNE LNE MN F	21 20 32 26 35 32 20ca 35 35ca 22 20	4440	
472 28th	PNEZ SNE LNE MNE F	8 15 54 20 52 24 30 27 00ca 10 14	3460	Dilatation (?). In region of 43°N; 144°E by Manila, Chiufeng, Taihoku, Hong Kong.
475 29th	1PZ ePNE 1SNEZ LNEZ MNE F	14 38 43 44 45 33 51 ca 56 50ca 15 40	5230	Compression. In vicinity of 37°N; 78°E by Chiufeng, Hong Kong, Manila.
476 30th	1PNEZ 1SNEZ LNE MNE F	15 15 25 22 24 30 ca 34 ca 17 50	5410	Compression. Kareliotka, according to Chiufeng. Data after P from the Wiechert and G-W Vertical.
477 30th	PNEZ SNE LNE F	19 44 00 51 10 56 30ca 21 04	5410	

Thirty-six insignificant or undecipherable disturbances on the following days of June: 3rd(6), 5th, 6th(2), 7th, 8th, 10th, 11th(4), 12th(3), 14th(4), 15th, ~~5th~~ 17th(2), 18th, 19th, 20th, 21st, 22nd(2), 23rd(2), 28th, and 29th.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.



International
Seismological
Centre

$\phi=14^{\circ} 34' 42''$ N.

$\lambda=120^{\circ} 58' 41''$ E.

h=3 m.

Alluvium.

CONSTANTS OF THE
GALITZIN-WILIP

	T_1	T	μ^2	V_s
N-S	12.6	12.9	0	400
E-W	11.8	11.9	.08	229
Z	11.6	9.0		

CONSTANTS OF THE WIECHERT
INVERTED PENDULUM. M=955 Kg.
July 3, 1936.

	T_0	V	ϵ	$\frac{r}{T_0^2}$
N-S	4.1	205	2.5	0.065
E-W	4.2	243	3.0	0.068

Cf. Theoretical Seismology, Schou, S.J.

No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
1936 July				
478 2nd	PEZ SNEZ F	5 14 52 16 00 52	595	
483 4th	PNEZ SNEZ F	9 02 08 06 11 45	2570	
486 5th	1PNEZ SNE F	18 57 47 19 00 09 20 50	1365	Compression from SE. Felt in southern and eastern Mindanao, Sulu and Palau. $3^{\circ} 20' N$; $126^{\circ} 20' E$; H=18:54:48 by Manila. Palau, Hong Kong, Chiufeng. Data after P from Wiechert & Horizontal.
487 6th	1PZ ePNE SNEZ F	1 58 17 17 2 00 39 3 08	1365	Compression. Felt in southeastern Mindanao and in Palau. Same epicenter as No. 486.
488 6th	PNEZ SNE LNE F	18 24 52 28 10 31 10ca 19 35	1955	Approx. $1^{\circ} S$; $127^{\circ} E$ by Palau, Manila, Nan- king, Chiufeng.
493 10th	1PNEZ SNEZ F	19 35 15 36 35 20 49	720	Dilatation from SE.
496 11th	1PZ ePNE SNE F	22 24 33 33 28 04 23 10	2120	Dilatation.
497 12th	1PZ PNE SNE LNE F	2 53 42 42 3 03 13 17 ca 4 07	8045	Compression.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
1936 July				
498 12th	$\bar{1}PZ$ $\bar{P}NE$ $\bar{S}NE$ F	15 14 26 28 44 27	145	Dilatation.
500 13th	$1PZ$ $1PE$ $1PN$ SKKS F	11 32 20 23 25 43 46 15 40	18280	Compression. Chile. $24^{\circ}S$; $72^{\circ}W$; $O=11;12.3$ by U.S.C.G.S. Data after P from the Wiechert and Horizontal.
501 14th	PNEZ SNE F	0 26 36 27 28 37	430	
503 15th	P?NEZ SNEZ F	2 00 28 07 16 30	5200?	
504 15th	PNEZ SNEZ F	7 05 04 07 30 21	1410	
506 15th	PNEZ S?NE F	11 55 45 12 00 18 45	3020?	
507 16th	PNE SNEZ F	5 42 14 43 13 55	500	Felt at Kabankalan, Negros Occidental.
509 16th	$\bar{P}NEZ$ $\bar{S}NE$ F	19 29 00 16 35	125	Felt at Moncada, Tarlac.
511 20th 21st	SNE F	23 59 20 0 25	1090	P lost in microseisms. Felt strongly in Sintiku Prefecture. $24.4N$; $120.8E$ according to Taihoku.
520 26th	$1P: EZ$ $1Z$ $1E$ $1SKKS$ F	7 57 01 58 00 8 06 27 08 37 10 45	18280	Compression. Phase at 8:06:27 is extraordinarily large. $24^{\circ}S$; $72^{\circ}W$; $O=7:36;54$ by U.S.C.G.S.
523 28th	PNEZ $1E$ SEZ LE MEZ F	5 24 19 25 56 29 21 34 30 ca 37 ca 7 30	3455	Probably in New Guinea.

No. 27.

July, 1936.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No. and Date	Phase.	Greenwich Greenwich Time			Dist. Km.	Remarks.
		h.	m.	s.		
1936 July						
524 28th	PZ	7	58	31	3135	Probably in New Guinea.
	PNE			32		
	SNE	8	03	12		
	LNE		07	40		
	F	9	48			
526 30th	1PZ	6	16	33	185	Dilatation.
	•PNE			33		
	1SNE			50		
	F		21			
527 31st	PNEZ	0	45	26	305	Felt in towns north of Mayon Volcano.
	SNE		46	07		
	F	1	00			
528 31st	P?NE	4	07	22	960?	Felt at Davao with intensity II. Disturbed by microseisms.
	S?E		09	04		
	F		30			

Twenty-eight insignificant or undecipherable disturbances on the following days of July: 2nd(2), 3rd, 4th, 5th(2), 10th, 11th(2), 12th, 14th, 15th, 16th, 19th, 23rd(4), 24th(2), 25th(2), 27th(2), and 28th.

M A N I L A , P . I .

S EISMOLOGICAL BULLETIN OF THE OBSERVATORY



$\phi=14^{\circ} 34' 42''$ N.

$\lambda=120^{\circ} 58' 41''$ E.

h=3 m.

Alluvium.

CONSTANTS OF THE GALITZIN-WILIP

	T_1	T	μ^2	V_s
N-S	12.6	12.9	0	400
E-W	11.8	11.9	.08	229
Z	11.6	9.0		

CONSTANTS OF THE WIECHERT
INVERTED PENDULUM. M=955 Kg.
August 2, 1936.

	T_0	V	ϵ	$\frac{r}{T_0^2}$
N-S	4.1	207	2.5	0.068
E-W	4.3	231	2.9	0.059

Cf. Theoretical Seismology, Söhen, S.J.

No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
1936 August				
529 1st	PNEZ SNE LNE F	6 29 45 34 09 37 ca. 7 33	2880	Deep focus. Destructive in Kansu, China, according to Nanking.
532 3rd	PNEZ SNE F	10 10 57? 12 56 38	1145	In region of $24^{\circ} 30' N$; $123^{\circ} 30' E$ by Tai- hoku and Manila.
533 3rd	PNEZ SNE F	17 49 36 58 55	175	
534 4th	iPEZ ePN iSNEZ F	14 10 50 51 11 54 16 02	520	Compression from N. Felt in the Batanes Islands and in north- ern Luzon. $19^{\circ} 10' N$; $120^{\circ} 30' E$ by Manila, Taihoku, Hong Kong, Chiufeng. Baguio, 310 Km.
535 4th	PNEZ SNEZ F	20 08 48 09 09 22	165	
536 5th	PNEZ SNE F	14 15 37 17 10 43	860	Felt at Cantilan, Surigao. $9^{\circ} 10' N$; $126^{\circ} 35' E$ by Manila and Butuan.
543 9th	iPNEZ iSNE F	16 08 20 09 21 17 30	520	Dilatation. Felt at Bangui, Ilocos Norte. $19^{\circ} N$; $119^{\circ} 10' E$ by Manila, Hong Kong, Nanking, Chiufeng.
546 13th	iPNEZ iSNE F	20 04 39 06 23 22 30	980	Felt in northern and eastern Mindanao and in southern Leyte. $8^{\circ} N$; $127^{\circ} E$; H=20:02:36. At Manila, compression from SE. S from the Wiechert. At Butuan, dilatation from E.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No. and Date	Phase.	Greenwich Time			Dist. Km.	Remarks.
		h.	m.	s.		
1936 August						
550 14th	PNE SNE LNE F	22	37	02	1330	Felt in southern and eastern Mindanao. From the Wiechert. Butuan, 560 Km.
554 17th	P?NEZ SNE LN F	14	07	35	4135?	Disturbed by microseisms.
556 17th	1PNEZ 1SNE F	17	56	36	1145	
557 18th	PZ SNE F	2	03	50	1320	Disturbed by microseisms.
560 18th 19th	1PNEZ SNE F	23	56	07	150	Compression from SE. S from the Wiechert. Felt in southern Luzon, Marinduque and northern Mindoro. In Tayabas Bay by Manila and Baguio.
562 19th	PNEZ SNE F	9	06	50	190	
564 21st	PNEZ SNEZ F	3	14	48	145	
565 21st	PNEZ SNEZ F	6	02	08	135	
566 21st	PNEZ SNE F	8	47	44	1000	
568 22nd	1PNEZ 1SNE F	6	53	26	1155	Compression from NE. Felt all over For- mosa, 22° 25' N; 121° 35' E by Manila, Hong Kong, Zikawei, PhuLien. H=6:51:36, h=75 Km. (22° 2N; 121° 2E by Taihoku).
569 22nd	PNEZ SNE F	11	10	52	1155	Aftershock of No. 568.
571 22nd	PNEZ SNE F	14	23	39	250	

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
1936 August				
576 23rd	1PZ 1PNE SNE LNE F	21 17 56 57 22 26 24 34 23 05	2870	Compression from the west-southwest. Data after P from the Wiechert. Baguio, 3035 Km.
579 23th	1PZ ePNE S?N F	6 46 40 40 51 52 7 35	3610?	
581 30th	PNEZ SN F	17 00 21 05 04 39	3155	
582 30th	PEZ SNE F	21 37 33 44 35 22 08	5300	

Thirty-two insignificant or undecipherable disturbances on the following days of August: 1st, 2nd, 6th(2), 7th(2), 8th, 9th, 10th, 11th, 14th(3), 15th(2), 16th, 17th, 18th(2), 19th(2), 21st, 22nd(2), 23rd(3), 24th(2), 30th, and 31st(2).

MANILA OBSERVATORY
SPECIAL BULLETIN OF PRINCIPAL EARTHQUAKES

SEPTEMBER, 1936

4th	1PZ	8 15 01	
	1SNEZ	19 47	
5th	1PZ	21 50 30	
	1SNEZ	54 33	
6th	1PZ	17 51 01	
	SNE	18 00 32	
9th	1PZ	2 49 45	Compression from SE.
	1SNEZ	53 25	Deep focus.
12th	PNEZ	18 01 27	
	SNE	03 59	
18th	PNEZ	18 43 57	
	S?NEZ	48 40	
19th	1PNEZ	1 07 16	Compression from W.
	1SNEZ	12 04	
19th	•PNEZ	6 36 13	
	SNE	41 15	

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.



$\phi=14^{\circ} 34' 42''$ N. $\lambda=120^{\circ} 58' 41''$ E. $h=3$ m. Alluvium.

CONSTANTS OF THE GALITZIN-WILIP

	T_1	T	γ^2	V_S
N-S	12.6	12.9	0	400
E-W	11.8	11.9	.08	229
Z	11.6	9.0		

CONSTANTS OF THE WIECHERT INVERTED PENDULUM. $M=955$ Kg

September 2, 1936.

	T_0	V	ϵ	$\frac{r}{T_0^2}$
N-S	4.1	206	2.4	0.064
E-W	4.3	249	2.1	0.075

No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
1936 Sept.				
591 4th	1PZ ePNE 1SNEZ LN F	8 15 01 01 19 47 24 ca 10 10	3210	Japan.
592 5th	1PZ ePNE 1SNEZ F	21 50 30 30 54 33 22 45	2580	
595 6th	1PZ ePNE SNE LN F	17 51 01 01 18 00 32 14 12 19 20	8045	
596 7th	P?EZ SNE LNE F	12 36 24 40 40 43 15 13 20	2755?	Disturbed by microseisms.
599 9th	1PZ ePNE 1SNEZ F	2 49 45 45 53 25 3 47	2245	Compression from SE. Deep focus.
606 12th	PNEZ SNE LNE F	18 01 27 03 36 05 ca 19 20	1155	Felt widely in Formosa, $24^{\circ}4'N$; $120^{\circ}8'E$ according to Taihoku.
611 15th	PNZ SNEZ F	13 13 17 14 17 45	510	Felt at Bangui, northern Luzon.

No 33.

September, 1936.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
1936 Sept.				
639 24th	iPZ ePNE SNE F	19 25 16 16 29 04 20 15	2360	
640 24th	PNEZ SNE F	20 56 56 21 01 01 30	2610	Felt in Szechwan, China, according to Nanking.
642 25th	PPEZ PS(?) eNE L NE F	13 10 40 18 32 33 00ca 37 30ca 14 52	10500	43°5N; 128°2W; O=12:53:6 by U.S.C.G.S. Disturbed by microseisms.

Forty-four insignificant or undecipherable disturbances on the following days of September: 1st(2), 2nd, 3rd(3), 6th(2), 7th, 8th, 10th(3), 11th(3), 12th, 13th, 14th(1), 16th(2), 17th, 18th(2), 19th(2), 20th(3), 21st, 23rd(4), 24th, 25th(2), 26th(3), 27th, and 29th(2).

M A N I L A , P . I .



SEISMOLOGICAL BULLETIN OF THE OBSERVATORY

 $\phi=14^{\circ} 34' 42''$ N. $\lambda=120^{\circ} 58' 41''$ E.

h=3 m.

Alluvium.

CONSTANTS OF THE
GALITZIN-WILIP

	T_1	T	γ^2	V_s
N-S	12.6	12.9	0	400
E-W	11.8	11.9	.08	229
Z	11.6	9.0		

CONSTANTS OF THE WIECHERT
INVERTED PENDULUM, $M=955$ Kg.

October 3, 1936.

	T_0	V	ϵ	$\frac{r}{T_0^2}$
N-S	4.0	214	2.4	0.080
E-W	4.1	285	2.9	0.067

No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
1936 October				
650	PNEZ	2 51 34	460	Baguio, 280 Km.
2nd	SNEZ	52 29		
	F	3 10		
653	1PNEZ	21 53 22	1625	Dilatation from SE.
3rd	1SNEZ	56 10		
	1LNE	57 35ca		
4th	F	0 05		
654	PEZ	0 05 00	9390	Compression.
5th	SNE	15 33		N Component stopped at 21:35.
	F	1 05		
655	PNEZ	6 10 04	595	Dilatation. In the vicinity of $9^{\circ} 20' N$;
5th	SNE	11 12		$122^{\circ} E$.
	F	8 20		Felt in SE Panay and S Negros.
656	1PNEZ	9 47 43	1755	Compression from SE.
5th	SNE	50 44		Data after P from the Wiechert.
	F	12 40		Butuan, 810 Km.
				$1^{\circ} N$; $127^{\circ} E$ according to U.S.C.G.S.
				$3^{\circ} N$; $126^{\circ} 4' E$, h=100, H=9:44:34 by J.S.A.
658	PNEZ	20 22 13	2780?	
5th	S?NE	26 30		
	F	21 00		
664	PNEZ	3 10 30	1100?	S. from the Wiechert. Disturbed by strong
10th	S?NE	12 30		microseisms.
	F	4 20		Felt at Davao with intensity II.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued



No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks
1936 Oct. 665 10th	PNEZ SNE F	6 13 50 14 10 26	160	Felt at Atimonan and Boac with feeble intensity. S from the Wiechert. Disturbed by strong microseisms.
667 13th	PNEZ SNE F	6 35 59 38 38 7 08	1535	Disturbed by microseisms.
669 16th	iPZ ePNE SNE LNE F	12 03 49 50 10 07 16 30ca 13 02	4690	Compression. Solomon Islands by Riverview and Manila.
670 19th	iPNEZ SNE F	12 08 23 11 41 13 15	1900	Dilatation. In Maluco by Riverview and Manila. Disturbed by microseisms.
672 22nd	PNEZ SNE F	7 54 11 56 17 8 18	1210	
676 23rd	PNEZ SNE F	4 15 17 17 25 42	1235	
677 23rd	iPNZ iSNE L?NE F	6 36 17 46 00 58 ca 9 40	8290	61°1N; 149°2W; O=6:24:21 by U.S.C.G.S.
681 24th	PEZ SNE LNE F	16 08 07 12 42 14 25 17 05	3045	
684 25th	PNEZ SNE LNE F	15 36 13 40 47 42 51 16 17	3035	



M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks
1936 Oct. 685 28th	ePNEZ SNE LE F	9 38 17 43 17 45 50ca 10 30	3430	
686 26th	PNEZ SNE F	19 37 36 41 58 21 23	2355	Deep focus.
687 26th 27th	PNEZ SNE F	23 29 15 31 15 0 27	1155	Felt in Davao with intensity II.
689 29th	PNEZ SNE F	18 44 00 48 20 21 35	2820 2820	Dilatation. Felt very strongly in Guam. Some damage to buildings.
692 30th	PNEZ SNE F	9 07 13 08 57 37	975	
694 30th	PN EZ SNE F	11 43 47 45 45 12 15	1135	Felt at Davao with intensity II. Felt at Kabankalan, Or. Negros (?).
695 30th	PNEZ SNZ F	17 19 21 24 00 18 20	3100	

Twenty-five insignificant or undecipherable disturbances on the days of October: 2nd, 3rd, 5th(2), 7th(2), 8th, 9th, 11th, 16th, 22nd(3), 23rd(3), 24th, 25th(2), 29th(2), 30th(2), and 31st(2),

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY



$\phi=14^{\circ} 34' 42''$ N.

$\lambda=120^{\circ} 58' 41''$ E.

$h=3$ m.

Alluvium.

CONSTANTS OF THE GALITZIN-WILIP

CONSTANTS OF THE WIECHERT INVERTED PENDULUM. $M=955$ Kg.

November 1, 1936

	T_1	T	ψ^2	V_s
N-S	12.6	12.9	0	400
E-W	11.8	11.9	.08	229
Z	11.6	9.0		

	T_0	V	ϵ	$\frac{I}{T_0^2}$
N-S	4.0	211	2.4	0.092
E-W	4.3	245	3.0	0.066

No. and Date	Phase.	Greenwich Time			Dist. Km.	Remarks
		h.	m.	s.		
1936 Nov. 701 1st	P?NEZ SN F	17	15	34 20 07 18 30	3022?	
702 2nd	\bar{P} EZ SNE F	4	59	24 46 5 03	175	
703 2nd	iPNZ ePE SNE F	15	05	49 49 12 06 18 25	4700	Compression.
704 2nd 3rd	iPNEZ SNE F	20	52	03 56 54 0 45	3035	Japan. Compression. S from the Wiechert Baguio, 2855. 57.5° N; 142° E by U.S.C.G.S.
706 3rd	PNEZ SNE F	20	16	19 17 24 40	560	Felt in northern Luzon.
707 4th	P?NEZ SNE LE MNE F	7	30	48 36 25 41 ca 44 ca 8 26	4020?	Disturbed by microseisms.
708 4th	PNEZ SNE F	9	20	49 27 24 55	4980	
709 4th	iPZ ePNE iSNE F	13	49	55 55 54 00 14 45	2610	Compression. Deep focus.
710 5th	P?NE SNE F	7	41	49 45 24 8 40	2180?	Disturbed by microseisms.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY. Continued.



No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
1936 Nov. 711 6th	PNZ SNE F	12 13 32 19 26 35	440	Disturbed by microseisms. S from the Wiechert. + Baguio, 260 -
713 12th	iPZ ePNE S?NE F	2 21 01 01 25 55 3 10	3345?	Disturbed by microseisms.
714 12th	iPZ SE F	8 53 30 37 49 9 23	2665	Dilatation. Felt in Guam. Deeper than normal.
716 13th	iPNEZ iSNE iN iLN F	12 40 44 46 32 49 54 56 15 15 50	6220	Compression from NE. 57° N; 163° E; $\sigma=12:31:30$ by U.S.C.G.S.
717 14th	PNEZ SNE F	2 04 06 42 12	255	Baguio, 190 Km.
722 15th	PNEZ SE F	22 00 40 09 06 23 20	6900	
724 16th 17th	iPZ ePN SNE F	23 35 40 40 39 30 0 55	2390	
727 19th	PNEZ SNE F	21 29 46 35 29 23 40	2280	Disturbed by microseisms.
728 20th	PNEZ SNE F	3 00 19 01 11 07	430	Felt at Virac with intensity IV and at Naga with II.
732 24th	PNEZ SNE F	22 41 10 44 23 05	245	Probably off east coast of northern Luzon by Baguio and Manila.
733 25th	P?NEZ SNE F	6 53 46 55 18 7 20	850?	Disturbed by microseisms. Felt at Cantilan, Surigao.
734 25th	PEZ SNE F	11 50 50 56 40 12 26	4235	Disturbed by microseisms.
735 26th	PEZ SNE F	8 27 44 31 50 9 15	2620	Disturbed by microseisms.

No. 39.

November, 1936.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks
1936 Nov. 737 27th	PNEZ SNE F	10 07 56 08 36 24	295	Trace in Baguio.
740 29th	PNEZ S?NE F	8 36 50 44 50 9 30	6465?	Disturbed by microseisms.
743 29th	PNEZ S?NE F	22 52 02 53 44 23 56	960?	Disturbed by microseisms.
744 30th	iPNEZ iSNEZ F	2 51 59 52 11 3 10	90	Dilatation from SE. Deeper than normal. Felt in Manila with intensity II.
746 30th Dec. 1	PNEZ SNE F	23 49 50 50 15 1 30	200	Compression. Probably near Baguio by Manila and Baguio.

Twenty-two insignificant or undecipherable disturbances on the following days of November: 1st(3), 3rd, 11th, 12th, 14th(3), 15th(2), 18th, 19th, 21st, 22nd(2), 26th, 28th(2), 29th(2), and 30th.

No. 40.

December, 1936

MANILA, P. I.

$\phi = 14^{\circ} 34' 42''$ N.

$\lambda = 120^{\circ} 58' 41''$ E.

$h = 3$ m.

Alluvium.



CONSTANTS OF THE GALITZIN-WILIP

CONSTANTS OF THE WIECHERT INVERTED PENDULUM. $M = 955$ Kg.
December 1, 1936.

	T_1	T	μ^2	V_s
N-S	12.6	12.0	0	400
E-W	11.8	11.9	.08	229
Z	11.6	9.0		

	T_0	V	E	$\frac{I}{T_0^2}$
N-S	4.0	203	2.4	0.074
E-W	4.4	254	2.8	0.064

No. and Date	Phase.	Greenwich Time			Dist. Km.	Remarks
		h.	m.	s.		
1936 Dec. 747 1st	1PNEZ 1SNE F	6	13	08 16 24	1800	Deep focus.
750 2nd	PNEZ SNE F	19	18	20 16 26	470	Felt in northern and northwest Luzon. Disturbed by microseisms.
751 3rd	PNEZ SNE F	6	08	11 49 20	280	Felt at Narvacan, Ilocos Sur. Disturbed by microseisms. $16^{\circ} 55' N$; $119^{\circ} 55' E$ by Baguio & Manila.
755 6th	PNEZ SNE F	6	09	36 12 51	1780	
756 7th	ePNEZ 1SNEZ F	16	28	21 16 53	460	Felt at Aparri and Lallo. Baguio, 230 Km. Probably slightly deeper than normal.
759 8th	1PNEZ SNE F	10	25	56 02 20	580	Compression. Felt strongly at Ormoc, Leyte. Also at Hinundayan, Leyte. Butuan, 240 Km. Center probably in Ormoc Bay.
761 8th	PNEZ SNEZ F	15	59	56 54 50	2210	Dilatation.
762 8th	PNE S?N F	17	47	34 32 22	2500?	
766 11th	PNE SNE F	21	19	57 22 34	195	
767 12th	PNEZ SN F	8	03	36 53 10	1320	Compression.
768 13th	PNEZ SNEZ F	11	02	31 19 16	390	

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



No. and Date	Phase.	Greenwich Time			Dist. Km.	Remarks.
		h.	m.	s.		
1936 Dec. 770 13th	iPNEZ S?NE F	16	15	09 16 34 17 03	775?	Compression.
771 13th	iPEZ ePN iSNE LNE F	21	36	01 01 40 11 42 ca 23 45	2680	Compression. Felt in Guam with intensity VII.
772 14th	iPNEZ iSE F	4	04	03 21 5 30	150	Dilatation from SW. Probably $14^{\circ} 16' N$; $119^{\circ} 47' E$ by Manila and Baguio as on April 10, 1932. Felt in southwestern Luzon. S from the Horizontal Pendulums.
775 15th	PNEZ SNE F	15	41	37 42 24 14 02	370	Felt at Aroroy, Masbate.
777 18th	iPNEZ iSNE F	3	25	10 25 36	120	Compression from SW. Felt in Manila and in Cavite Province. S from the Horizontal Pendulums.
779 20th	PNEZ SNE F	18	35	09 40 06 19 20	3390	
780 21st	iPNEZ iSNE F	3	41	34 42 16 4 00	320	Compression. Felt at Vigan and Nar- vacan. Epicenter in China Sea. Deep- er than normal.
781 21st	PNEZ SNE F	19	19	18 26 56 20 40	6090	
783 24th	PNEZ S?NE F	10	09	42 13 21 11 07	3820 2230?	Disturbed by microseisms.
784 24th	PNEZ S?NE F	13	22	47 28 12 14 55	3820?	Disturbed by microseisms.
786 24th	PNEZ SNEZ F	19	28	54 29 21 20 00	210	Disturbed by microseisms. Epic. 150 Km.
788 26th	PNEZ iSN F	15	26	02 54 16 25	430	Felt in southeastern Luzon.
790 26th	iPZ SNE	23	04	06 14 12	8890	Compression.

No. 42.

December, 1936.

M A N I L A , P . I .

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No. and Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
1936 Dec. 791 27th	ePEZ SE F	0 20 09 25 00 1 40	3100	#790 still recording. No record on N Component. Japan.
798 28th	PNEZ SNE F	17 26 58 30 12 18 03	1920	
800 29th	1PNEZ SNE F	14 55 04 15 00 31 18 30	3800	Compression from SE. 7° S; 147° E by Riverview and Manila.
803 30th	PNEZ SNE F	4 13 22 17 06 5 15	2300	
804 30th	PNEZ SNE F	8 34 16 37 54 9 00	2210	

Thirty-one insignificant or undecipherable disturbances on the following days of December: 1st(2), 5th(3), 7th(2), 8th, 10th(2), 11th, 13th, 14th, 15th, 17th, 19th, 22nd, 24th, 25th, 26th, 27th(5), 28th, 29th(2), 30th, and 31st(2).