

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.

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## INSTRUMENTS.

Galitzin-Wilip, three components.

Wiechert Inverted Pendulum, 955 Kg.

Horizontal Pendulums, two components, 118 Kg. each.

Data taken from the Galitzin-Wilip, unless otherwise stated.

No.	Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
	Jan. 1941				
3	2nd	iPNZ iSNEZ F	16 52 17 54 23 18 10	1,210	Compression.
7	4th	iPZ ePNE SNE F	1 54 20 20 58 35 2 27	2,740	
8	4th	iPEZ iSN iE F	3 17 35 21 45 23 09 4 25	2,670	Compression.
13	5th	ePNEZ iSNEZ F	13 25 39 26 12 45	240	Epicenter in Ragay Gulf by Manila and Tagaytay. Felt at Daet and Naga,
15	5th	iPNEZ iSNE LN F	18 50 06 52 37 54 00ca 21 20	1,450	Dilatation from south. Felt at Jolo. Data after P from the Wiechert.
16	5th	ePNEZ SN F	23 01 13 02 57 20	970	
17	6th	ePNEZ SNE F	5 07 51 13 55 45	4,450	
18	6th	iPZ SE F	10 08 00 10 19 35	1,345	
20	7th	iPZ iPNE iSNE MN F	10 41 14 16 44 03 47 05ca 11 45	1,625	Compression.



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## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase.	Greenwich Time			Dist. Km.	Remarks.
			h.	m.	s.		
	Jan. 1941						
24	8th	ePNE SNE LNE F	18 49 51 19	47 56 28ca 16	14 56 ca	1,555	
28	11th	iPZ ePNE S?E F	2 57 3	53 38 50 57	36 38 50	2,730?	
29	11th	iPEZ SNE SSNE LNE F	8 53 58 9 10	43 18 00 18 15	42	8,150	Dilatation from west.
32	12th	iPNEZ SNE LN F	0 25 27 1	21 03 05ca 55	43	1,990	Compression from SSE.
33	12th	iPZ ePNE SNE LN F	1 2 3	59 02 03 15	24 24 14 45ca	1,630	
34	13th	iPEZ ePN SNE LN F	16 40 49 20	34 43 30 43ca 27	43 43	4,110	Dilatation. Felt very strongly in Rabaul, New Guinea, according to Riverview. S and L from the Wiechert, 3°S; 144°E; probably h=100 by USCGS.
35	14th	ePNEZ SNE F	15 18 30	17 27 30	45	290	
40	16th	ePNE SNE LNE F	11 48 51 12	43 06 50ca 20	57	2,650	
48	19th	PEZ P'NE LNE F	3 4 5	33 36 19 40	09 14 35ca	14,550?	
49	19th	ePE SEZ F	5 17 51	15 19 51	49 19	830	
50	19th	eP?EZ SEZ F	13 14	57 02	11 26 42	3,660?	



## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase.	Greenwich Time			Dist. km.	Remarks.
			h.	m.	s.		
	Jan. 1941						
52	20th	PEZ iSEZ F	3	49	10 59 07 5 15	8,560	No records on N component.
53	20th	ePNEZ SNE F	12	51	50 54 22 13 30	1,470	
54	21st	iPNZ ePE iSNE F	1	23	23 23 41 27	140	Region of Mindoro by Manila and Tagaytay.
56	21st	PZ ePNE iSNE LNE MN F	12	47	57 58 54 14 59 35ca 13 04 00ca 14 40	4,680	compression.
57	21st	iPZ ePNE SNE F	14	02	00 00 20 07	155	Region of Mindoro by Manila and Tagaytay.
61	22nd	ePNE SNE F	23	25	46 28 14 45	1,420	
63	23rd	iPZ ePNE SN LNE MN F	5	21	04 04 26 48 31 ca 34 30ca 56	4,120	Dilatation.
67	24th	iPZ ePNE SN F	15	56	33 33 16 01 00 17 30	2,920	
68	24th	iPZ ePNE SE LNE ME F	19	35	08 08 40 53 45 47ca 48 45ca 20 47	4,130	Compression.
69	25th	ePZ SN F	2	45	04 46 36 56	580	
70	25th	iPEZ ePN SNE	23	45	44 44 54 26	7,080	Dilatation from west.
	26th	F	0	40			





## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
	Jan. 1941				
71	26th	ePNEZ SNE F	10 52 38 58 42 11 35	4,450	
72	26th	iPNEZ iSNE F	14 59 53 15 00 22 40	230	Compression from S. In region of Mindoro by Manila and Tagaytay.
75	27th	ePNEZ iSN LN MNE F	2 35 55 41 09 45 ca 47 50ca 3 30	3,455	
80	28th	P?Z eP?NE S?N F	3 30 10 18 37 14 4 25	5,490?	
81	28th	iPZ iSNE F	9 04 10 11 42 50	5,940	Dilatation(?). Deeper than normal.
82	29th	ePNEZ iSNEZ F	4 17 02 54 28	430	Felt at Laoag and Vigan.
86	31st	iPNEZ iSNEZ F	2 43 19 47 04 4 15	2,310	Dilatation from SE. W. New Guinea by Manila and Butuan.

Forty-nine insignificant or undecipherable disturbances on the following days of January: 1st(2), 3rd(3), 4th(3), 5th(2), 6th, 7th, 8th(3), 10th(2), 11th(2), 14th, 15th, 16th(2), 17th(4), 18th(3), 19th, 21st(2), 22nd(2), 23rd(3), 24th, 26th(2), 27th(4), 30th(3), and 31st.

## C O R R E C T I O N

#355 June 22, 1940.

Cross out

"In region of  $11^{\circ}$ N:  $136^{\circ}$ E by Manila and Butuan."

FELT IN N CELEBES.



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

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Alluvium.



## INSTRUMENTS.

Galitzin-Wilip, three components.

Wiechert Inverted Pendulum, 955 Kg.

Horizontal Pendulums, two components, 118 Kg. each.

Data taken from the Galitzin-Wilip, unless otherwise stated.

No.	Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
	Feb. 1941				
88	3rd	iPNZ ePE S?NE F	0 12 55 55 18 38 57	4,100?	
89	3	iPZ iSNEZ F	8 02 03 03 41 9 02	920	Compression.
91	4	iPZ iPNE iSNE F	14 04 54 54 06 17 16 15	755	Compression from SE. $10^{\circ} 25'N$ : $126^{\circ} 33'E$ . h=200 Km. by Butuan, Manila, Baguio, Ambulong and Tagaytay. Felt at Butuan, Hinatuan, Jagna, Borongan, Atimonan and Baguio. S from the Wiechert and Horizontals.
92	4	PNEZ SNE F	17 06 13 08 38 18 05	1,400	
94	5	iPZ ePNE SNE LN iMN F	23 07 48 48 10 32 12 18ca 14 08 0 50	1,580	Dilatation.
97	7	iPZ ePN SNE LNE MN F	15 22 47 47 30 17 38 30ca 43 50ca 17 15	5,940	Compression (?).
98	7	ePEZ SN LNE ME F	18 25 58 30 30 32 ca 35 05ca 19 25	2,845	



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## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.—Continued.



No.	Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
	Feb. 1941				
99	8	iPNEZ iSNEZ iLNE F	18 49 21 52 27 54 05ca 20 35	1,820	Dilatation from SE.
100	9	iPN ePEZ iSN ME F	4 22 12 12 27 56 36 10ca 5 25	4,120	
101	9	iPZ ePNE SNEZ F	9 00 53 53 01 10 08	135	13° 42'N: 120° 13'E by Manila, Am- bulong and Tagaytay. h=50 Km.?
102	9	PEZ PPZ SKS SKKS PSNE PPS SS LNEZ MNE F	9 57 45 10 01 35 08 24 08 47 10 19 11 00 15 44 30 30ca 38 00ca 12 15 ca	10,830	40°9N: 125.4°W by USCGS. H=9:43:52.
103	9	iPEZ SNE LNE F	19 26 39 32 41 38 25ca 21 20	4,450	Compression. Near 0°: 158°E by Riverview and Manila.
104	9	iPEZ ePN SNEZ F	22 11 17 17 44 24	210	Compression. Felt at Daet.
105	10	ePNEZ SN F	7 04 23 06 29 20	1,210	Felt at Butuan.
107	10	ePNEZ iSNE F	23 04 49 05 07 14	140	
109	11	P'Z SKP SS SSSN LNE M F	14 54 51 58 18 15 15 09 20 15 39 30ca 50 ca 17 23	14,980	Provisional epicenter 14.5°N: 94°W by USCGS.
111	12	ePNE SNE F	0 21 13 23 15 49	1,170	



## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY. —Continued.



No.	Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
	Feb. 1941				
112	12	ePNEZ SNE F	1 12 42 13 28 28	310	
113	12	iPNZ ePE SNE F	1 30 51 51 31 29 44	270	
115	12	iPZ ePNE SNE iLE F	18 09 32 32 12 05 13 15 45	1,480	
117	13	iPZ ePNE iSNEZ F	0 42 21 21 43 26 1 35	560	
118	13	iPN ePEZ SNZ LNE	12 57 01 01 13 00 13 01 50ca	1,900	
120	14	iPZ ePNE iSNEZ F	7 04 22 22 05 27 8 30	540	Compression?. In region of 19° 30'N; 120° 30'E by Baguio and Manila.
122	14	ePNEZ SEZ F	18 27 27 29 28 43	1,165	
123	14	P?NEZ F	19 15 05 21 15		More than 100°.
126	16	iPZ ePNE SNE LNE F	10 44 06 07 48 25 51 30ca 11 20	2,810	Compression.
128	16	iPZ ePN iPE iSNE MN F	16 49 05 05 06 57 15 17 12 30ca 18 20	6,620	Dilatation.
130	17	iPNZ ePE iSNEZ F	18 05 42 42 06 59 30	135	Dilatation from NW. Felt in western Luzon and Manila. 15° 17'N: 120° 03'E, h=75 Km. ca. by Manila, Ba- guio, and Ambulong.



## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



No.	Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
	Feb. 1941				
131	17	iFNEZ iSNEZ F	21 18 54 19 15 22 05	165	Compression from SW. 13°15'N: 120° 15' E by Manila, Ambulong, and Ta- gaytay. Felt at Manila. S from the Wiechert.
132	18	ePEZ SNE? LNE? F	4 36 30 40 06 41 55ca 6 05	2,190?	
135	19	ePNEZ SE F	19 47 42 50 10 20 11	1,420	
136	20	ePNEZ SNE F	15 38 10 43 22 16 20	3,610	
137	21	ePNEZ SNEZ iLE F	13 02 05 05 32 07 22 18	2,080	
138	22	PE SNE F	4 18 09 22 15 32	2,500	
139	22	iPZ ePNE iSN F	19 25 13 13 33 38 20 25	6,780	Dilatation.
140	23	iPZ ePNE SN F	1 23 29 29 30 17 46	5,200	
141	23	ePNEZ SNE F	5 49 20 53 33 6 43	2,720	
142	23	ePNEZ SNEZ LNE ME F	10 02 17 08 23 13 ca 16 30ca 42	4,480	
144	23	iPNEZ iSNEZ F	22 35 35 39 28 23 30	2,345	Dilatation from SE. Distance subject to correction for depth.
145	24	ePNEZ SN L?NE F	12 55 27 13 05 01 19 50ca 45	8,010	





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## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.—Continued.

No.	Date	Phase	Greenwich Time h. m. s.	Dist. Km.	Remarks.
	Feb. 1941				
147	25	iPZ PNE iSNE LNE MN F	5 42 52 53 47 33 50 20ca 53 10ca 7 40	3,100	Compression.
149	25	ePNEZ S?NE LN F	19 11 22 16 13 19 10ca 42	3,220?	
152	27	iPZ ePNE iSNEZ F	9 47 03 03 49 21 11 53	1,330	Compression from SE.
153	27	ePNEZ SN F	16 32 27 36 50 17 05	2,860	

Twenty-three insignificant or undecipherable disturbances on the following days of February: 4th, 5th, 7th(2), 10th, 11th(2), 12th(2), 13th, 14th, 15th(2), 16th, 17th, 18th, 19th, 23rd, 24th, 25th, 26th(2), and 28th.



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

h=3 m.

Alluvium



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## INSTRUMENTS

Galitzin-Wilip, three components.

Wiechert Inverted Pendulum, 955 Kg.

Horizontal Pendulums, two components, 118 Kg. each.

Data taken from the Galitzin-Wilip, unless otherwise stated.

No.	Date	Phase.	Greenwich			Dist. Km.	Remarks.
			h.	m.	s.		
	Mar. 1941						
159	2	iPZ ePNE SNEZ F	7	02	40 41 57 07	135	Tagaytay, 90 Km.
160	2	P?NE SN F	11 12 13	58 02 04	29 33	2600?	
166	3	P?NEZ iZ SNE LNE F	7	33	09 08 20 ca 27	3600?	
168	4	P?NEZ S?NE LN ME F	15	29	27 09 30 40 27	5100?	Disturbed by microseisms.
171	6	ePEZ ePN iSNEZ F	12	41	24 27 05 17	1510	
178	10	ePNEZ iSNEZ F	11	00	57 15 12	140	Tagaytay, 125 Km.
179	10	ePZ ePNE SNEZ F	17	18	15 16 07 30	345	Felt at Tuguegarao and Palanan.
180	11	ePNEZ SE LNE MNE F	13	36	06 08 50ca 50 44	6490	



## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase.	Greenwich Time			Dist. Km.	Remarks.
			h.	m.	s.		
	Mar. 1941						
181	12	ePEZ SNE F	9	21	20 25 31 45	2655	Felt in Guam. Epicenter about 20 Km. SW of Guam.
183	12	ePNEZ SN LNE iMN F	14	22	59 29 03 34 15ca 38 40 16 00	4450	
184	12	P?EZ SN LE iME F	21	43	26 48 32 52 25ca 56 00 23 10	3520?	
186	14	ePNEZ SNE MNE	14	37	31 44 26 54 15	5330	
188	14	iPZ ePN ePE iSN iE iN F	16	12	34 35 36 15 22 19 34 46 17 00	1620	Compression.
193	16	iPZ ePNE SNE iN iE iN F	7	50	49 49 57 26 49 8 03 46 04 57 10 15	5010	
196	17	ePNEZ iE SNE F	4	11	15 21 12 26 25	630	Felt at Basco.
201	19	iPZ ePN SE F	2	52	36 37 56 27 3 45	2400	
202	19	iPZ ePNE iSNEZ F	4	18	33 33 20 28 42	1090	Dilatation. Felt at Davao.
203	19	ePNEZ SNE F	9	36	43 37 12 46	215	Baguio, 175 Km. Prob. near 16°10'N: 122°10'E.



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## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase.	Greenwich Time			Dist. Km.	Remarks.
			h.	m.	s.		
	Mar. 1941						
204	19	iPZ ePNE iSNEZ F	19	42	01 01 43 56 20 45	1090	Dilatation.
206	21	iP'Z eP'NE PSKS? iNE M F	8	17	49 49 32 00 42 57 9 19 ca 10 20	16535	Compression. 7.3°N: 36.6°W by USCGS.
207	22	ePNEZ SN iN F	14	29	24 33 52 35 27 15 30	2640	
211	25	iPZ ePNE SNEZ F	6	03	15 15 34 13	150	Compression. Epicenter in Tayabss Bay by Manila, Ambulong, Tagaytay.
212	25	ePNEZ SNEZ F	15	53	57 56 33 16 15	1510	Felt at Jolo.
213	25	ePNEZ eSNEZ F	17	39	20 41 06 18 17	1000	Felt at Port Lamon.
215	27	ePNEZ iSNE F	18	08	58 09 15 15	135	
216	27	ePNEZ SNE LNE F	18	40	33 42 43 43 55ca 19 09	1250	
217	28	iPZ ePNE SNE F	8	26	09 09 28 31 49	1310	Felt at Baganga.
218	28	iPZ iZ SNE F	9	26	02 40 28 52 47	1630	Compression.
219	28	iPZ ePN SN LN MN	22	41	38 38 51 08 23 05 30ca 09 30ca	8050	Dilatation.
	29	F	0	35			



## M A N I L A , P . I .

## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY. -Continued.

No.	Date	Phase.	Greenwich Time			Dist. Km.	Remarks.
			h.	m.	s.		
	Mar. 1941						
221	29	ePNEZ SN iME F	20	00	42 29 46 45	4170	
222	30	ePNEZ SNE F	8	24	52 02 03	2660	
223	31	ePNEZ SNEZ F	13	00	00 18 10	140	Tagaytay, 170 Km.

Thirty-six insignificant or undecipherable disturbances on the following days of March: 1st(4), 2nd(3), 3rd(2), 5th(2), 6th, 7th(2), 8th(3), 12th, 13th, 14th, 15th(3), 16th(3), 17th(3), 18th, 20th, 24th(3), 26th, and 29th.

## C O R R E C T I O N

November 17, 1940

#633 PZ 6:08:06

iSNE 17 40

 $\Delta=8165$  Km.



No. 18.

20 DEC. 1941

May-June '41  
Ref 2880

May, 1941.

International  
Seismological  
Centre

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SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

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

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

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Alluvium.

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INSTRUMENTS

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Wiechert Inverted Pendulum, 955 Kg.

Horizontal Pendulums, two components, 118 Kg. each.

Data taken from the Galitzin-Wilip, unless otherwise stated.

No.	Date	Phase.	Greenwich Time			Dist. Km.	Remarks.
			h.	m.	s.		
	May 1941						
301	1	iPZ ePN iSNE F	19	43	37 37 47 52 20 35	2740	Dilatation. Deep focus.
302	2	iPZ ePNE SNE LN MN F	10	02	21 21 08 17 12 35ca 15 25ca 11 32	4140	Compression. Probable epicenter in region of New Britain by River-view and Manila.
307	4	ePNEZ iS?NE F	11	29	10 34 29 12 20	3730?	Deep focus?
308	4	iPZ ePE iSNEZ F	22	15	38 38 21 58 23 26	4550	Deep focus. Central Australia according to Riverview.
309	4	ePZ SNEZ F	23	31	40 38 26 0 04	5160	
310	5	iPZ ePNE iSN LNE MN F	15	24	57 59 30 15 34 25ca 37 40ca 17 05	3710	Dilatation.
311	5	ePEZ SEZ F	17	09	09 10 04 24	450	
312	6	ePNEZ SNE F	9	11	09 13 49 40	1540	



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## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase.	Greenwich Time			Dist. Km.	Remarks.
			h.	m.	s.		
	May 1941						
313	6	ePZ ePNE S?N F	17	04	29 35 45 15	5660?	
315	7	ePNEZ SNE F	2	56	20 55 11	260	
316	7	iPZ ePE ePN SNE F	12	29	58 59 00 22 55	5700	Dilatation.
318	8	iPNEZ iE iN SNE F	10	31	54 26 03 02 35	6480	Dilatation. 16°S: 170°E by River- view and Manila.
319	9	iPNEZ SNE F	5	33	11 39 15	225	Compression. S from the Wiechert and Horizontal. Felt in SE Luzon. 14° 25'N: 123° 05'E by Manila and Baguio.
320	9	PE SE	6	10	26 54	225	Aftershock of #319.
321	9	PNE SNE	9	05	56 24	225	Aftershock of #319.
322	9	ePNEZ SNE MN F	9	37	56 17 08 50	4720	
323	9	iPZ ePNE iSNEZ F	11	05	26 26 54 33	225	Aftershock of #319.
325	9	ePNE SNEZ F	18	40	20 51 03	270	Felt in NW Luzon. In the vicinity of 16° 30'N: 119°20'E; h=100 Km? by Baguio and Manila.
331	13	PPZ PSNEZ LNE F	16	19	16 10 20ca 22	10880	40.3°N: 125°W by USCGS.
332	13	ePNE SNE F	22	12	58 17 23	150	



## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
	May 1941				

Galitzin-Wilip horizontal components discontinued for lack of paper. Horizontal data given hereafter in the bulletins of the Observatory will be taken from the Wiechert or Horizontal Pendulums seismograms.

334	14	ePZ SZ F	3 59 04 4 00 57 21	1060	
335	14	PZ SZ F	5 30 24 31 47 43	750	
337	14	iPZ iSZ LZ MZ F	7 13 25 18 24 22 08 24 45 8 03	3410	Dilatation (?)
338	14	ePZ SZ F	8 23 10 24 59 55	1030	
342	16	iPZ iZ iSZ iLZ F	7 19 30 20 04 23 50 26 33 9 20	2820	Compression.
343	17	iPZ SNE LNE MNE F	2 33 58 41 26 49 30 54 20 6 20	5780	Compression. Data after P from the Wiechert. $12.9^{\circ}\text{S}$ : $166.7^{\circ}\text{E}$ by USCGS. $10^{\circ}\text{S}$ : $166^{\circ}\text{E}$ by Riverview and Manila.
345	17	e $\bar{\text{P}}$ Z $\bar{\text{S}}$ Z F	20 01 20 36 05	125	
346	18	ePZ S?Z F	11 22 17 26 32 12 16	2740?	
351	21	ePZ SZ F	1 50 23 55 33 2 35	3580	
352	21	e $\bar{\text{P}}$ Z iSZ F	6 07 33 08 02 18	230	Felt in Camarines Norte.



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			h.	m.	s.		
	May 1941						
353	21	ePZ iSZ F	12	32	53 35 13 45	1340	
354	22	ePZ SZ LZ F	1	07	24 11 43 14 24 42	2810	
356	22	iPZ SZ F	7	43	56 44 14 52	145	
357	22	PZ SZ F	14	17	09 32 21	185	
358	23	ePZ SZ F	2	45	18 46 46 54	560	Felt at Cebu.
359	23	ePZ iSZ F	4	45	11 46 08 52	490	
360	23	ePZ SZ F	8	16	23 18 24 29	1160	
361	23	ePZ SZ F	14	47	46 49 04 55	500	
362	23	ePZ SZ F	15	58	28 59 48 16 07	510	
365	24	iPZ iZ iSZ F	5	17	48 53 22 18 6 20	2970	Dilatation. Deep focus.
367	24	iPZ iSZ F	12	19	13 20 46 28	590	Dilatation.
369	24	ePZ S?Z F	13	00	52 05 03 27	2700?	
370	24	iPZ SZ F	19	55	54 20 02 36 35	5100	





No.	Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
371	May 1941 24	iPZ SZ F	23 21 54 22 28 26	590	
372	25	ePZ SZ F	4 02 30 05 17 20	1600	
373	25	PZ SZ F	11 03 24 08 08 19	3170	
374	25	PZ SZ F	21 11 04 35 15	570	
375	26	ePZ SZ F	7 32 50 34 20 55	570	
376	26	ePZ SZ F	14 41 29 43 11 58	630	
377	26	ePZ SZ F	16 27 27 40 30	100	
379	27	ePZ SZ F	12 47 11 48 10 56	490	
380	27	ePZ SZ F	13 33 15 36 07 14 00	1650	
381	29	iPZ SZ L?Z F	11 28 46 33 05 38 41 12 46	2810	
382	29	iPZ iSZ F	14 24 17 47 34	220	Felt in Manila, II.
383	30	ePZ iZ iSZ LZ F	17 41 05 17 51 33 18 09 05ca 42	9290	



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## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.---Continued.

No.	Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
	May 1941				
384	30	iPZ SZ F	21 38 57 47 37 22 10	7130	Dilatation (?)
385	30	ePNE SNE F	23 48 13 29 51	125	From the Wiechert.
386	31	ePZ SZ F	5 06 26 07 20 20	440	

Twenty-nine insignificant or undecipherable disturbances on the following days of May: 1st, 3rd(2), 4th(2), 6th, 7th, 9th, 10th, 11th(3), 12th, 14th(2), 15th(3), 17th, 18th, 19th(3), 22nd, 23rd(2), 24th(2), and 26th.



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

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## INSTRUMENTS

Galitzin-Wilip, three components

Wiechert Inverted Pendulum, 955 Kg.

Horizontal Pendulums, two components, 118 Kg. each.

Data taken from Galitzin-Wilip, unless otherwise stated.

No.	Date	Phase.	Greenwich Time			Dist. Km.	Remarks.
			h.	m.	s.		
	June 1941						
387	1	ePZ SZ F	2	12	22 15 30 25	1830	
388	2	e $\bar{P}$ Z $\bar{S}$ Z F	1	45	53 46 14 50	165	
389	2	i $\bar{P}$ Z $\bar{S}$ Z F	2	13	36 14 00 27	190	Felt at Naujan, Mindoro.
390	2	ePZ SZ F	18	21	24 24 50 32	2060	
391	4	ePZ iSZ iZ iZ L?Z F	16	36	00 40 03 20 41 43 52 17 20	2620	Felt in Guam, $1.8^{\circ}$ . Probable focal depth, 75 KM. Disturbed by microseisms.
392	5	i $\bar{P}$ Z i $\bar{S}$ Z F	8	42	17 53 9 14	285	Compression. Felt at Lobo, Batangas, at Naujan, Mindoro, and at Culion Island.
394	5	e $\bar{P}$ NE i $\bar{S}$ NE F	17	10	02 22 27	160	Felt in Manila, III. From the Horizontals and the Wiechert. Deeper than normal.
397	7	i $\bar{P}$ Z i $\bar{S}$ Z F	18	21	21 41 30	160	
398	7	i $\bar{P}$ Z i $\bar{S}$ Z	18	54	21 41	160	Dilatation.



No.	Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
	June 1941				
399	7	$\overline{\text{PNE}}$ $\overline{\text{SNE}}$ F	18 55 48 56 08 19 16	160	From the Wiechert.
401	7	$\overline{\text{PZ}}$ $\overline{\text{SZ}}$ F	19 31 22 42 35	160	
406	11	iPZ iSZ F	6 54 38 53 7 02	115	Dilatation. Felt at Iba.
408	11	ePZ SZ F	10 21 35 24 51 57	1930	
409	11	iPZ iSZ iMZ	23 18 37 23 03 29 17	2910	Compression.
	12	F	0 15		
410	12	e $\overline{\text{PZ}}$ $\overline{\text{SZ}}$ F	19 35 48 36 13 40	195	
413	13	iPZ iSZ F	22 19 41 24 15 48	3030	Dilatation (?).
414	15	ePZ SZ F	20 13 50 14 18 23	215	
415	16	iPZ iSZ iZ iZ F	11 29 34 31 36 34 15 34 12 50	1100	Compression. Probably deeper than normal. Felt in the northeastern part of Mindanao. Butuan, 275 Km.
418	18	iPZ iZ iSZ iMZ F	10 18 44 19 00 21 43 25 13 11 16	1700	Compression. In the region of Molucca by Manila and Riverview.
419	18	iPZ F	11 28 15 12 50		Long distance.
421	18	iPZ SZ F	20 02 38 05 26 56	1590	Compression. Probably in Malucco by Manila and Riverview.
424	21	eP?Z SZ F	0 41 22 45 42 1 09	2680?	Felt in Guam with intensity V. Probably near 12° 50'N: 144°E by Guam and Manila.



## M A N I L A , P . I .

## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

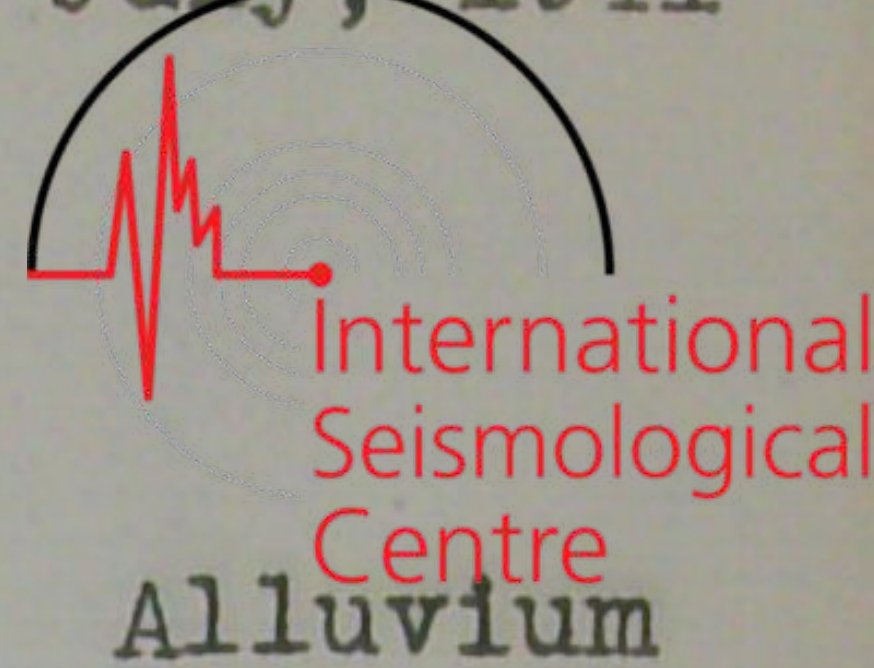
No.	Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
	June 1941				
425	21	iPZ iSNE F	8 14 57 16 57 9 25	1070	Dilatation. S from the Wiechert.
427	21	iPZ F	17 51 47 18 17	?	Dilatation.
429	23	iPZ iZ iSZ iZ F	9 32 30 33 38 35 55 36 54 10 51	2040	Compression.
434	26	iPZ iSZ F	11 57 52 12 03 00 15 20	3365	Compression. Near 8°N: 91°E by Manila and Riverview.
436	27	iPZ SNE F	8 03 55 10 37 50	5100	Epicenter in Central Australia according to Riverview. Data after P from the Horizontals.

Twenty-six insignificant or undecipherable disturbances on the following days of June: 5th, 6th(2), 7th(4), 10th, 11th, 13th(2), 17th(2), 18th, 19th(2), 21st, 23rd(2), 24th(3), 27th, and 30th(3).



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.

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## INSTRUMENTS

Galitzin-Wilip, three components.  
 Wiechert Inverted Pendulum, 955 Kg.  
 Horizontal Pendulums, two components, 118 Kg. each.

Data taken from the Galitzin-Wilip, unless otherwise stated.

No.	Date	Phase.	Greenwich Time			Dist. Km.	Remarks.
			h.	m.	s.		
	July 1941						
441	6	ePZ iSZ F	0	39	39 44 29 1 02	3260	
444	8	iPZ iSZ F	1	13	43 14 09 17	195	
445	8	iPZ SZ F	17	18	07 22 38 47	2980	
448	10	iPZ iSZ MZ F	3	27	23 32 03 37 ca 4 41	3120	Compression.
449	10	ePZ SZ F	9	50	06 54 44 10 16	3080	
450	10	iPZ SZ F	10	22	01 26 40 11 45	3100	Dilatation(?)
453	12	ePZ SZ F	11	19	03 21 11 28	1230	
454	12	iPZ SZ F	16	01	24 38 14	110	Compression. Felt very slightly in Manila. S from the Wiechert.
458	14	ePZ SZ MZ F	2	08	15 13 27 20 15 50	3610	Disturbed by microseisms.
461	15	ePZ SZ F	0	32	07 33 41 41	880	Felt at Port Lamon.
462	15	ePZ SZ F	14	51	00 53 57 15 20	1710	



## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued

No.	Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks
	July 1941				
467	19	iPZ iSZ iMZ F	15 17 47 21 32 25 52 16 34	2310	Compression. Deeper than normal.
468	19	iPZ iSZ F	17 56 10 57 26 18 37	680	Compression. Deep focus. In region of 14°N: 127°30'E by Manila and Butuan.
469	20	ePZ SZ F	6 11 10 19 36 50	6900	
474	24	iPZ iSZ MZ F	13 56 26 59 32 14 02 57 15 02	1820	Compression. Deep Focus?
475	25	iPZ SZ iZ F	4 22 05 23 30 48 55	775	Felt in northeastern part of Min- danao.
476	26	iPZ iSZ F	4 30 41 32 42 5 28	1165	Compression(?) Felt at Davao.
477	26	iPZ iSZ LZ MZ F	20 16 37 21 02 23 50ca 26 02ca 22 14	2745	Compression. Guam 2.1° Probably in the Nero Deep.
479	30	ePZ SZ F	2 03 24 13 45 3 45	9100	Dilatation(?) Region 60.8°N: 148.5° W by USCGS.
483	30	ePZ iSZ F	21 12 00 13 05 41	570	Felt at Calayan and Basco.
487	31	ePZ iSZ F	10 02 22 46 08	190	

Twenty-eight insignificant or undecipherable disturbances on the following days of July: 2nd, 3th, 7th, 9th(2), 10th, 11th, 12th, 13th(2), 14th(2), 16th, 17th, 18th, 19th, 20th, 21st(2), 23rd, 28th, 30th(3), and 31st(4).



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

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## INSTRUMENTS

Galitzin-Wilip, three components.

Wiechert Inverted Pendulum, 955 Kg.

Horizontal Pendulums, two components, 118 Kg. each.

Data taken from the Galitzin-Wilip, unless otherwise stated.

No.	Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
	Sep. 1941				
544	1	iPZ ePNE SEZ LNE F	23 19 12 16 23 55 27 11ca 57	3000	Dilatation.
545	2	ePNEZ SNE F	5 10 37 11 53 22	490	Felt at Aparri and Calayan.
546	2	iPZ ePNE SNE F	20 24 31 31 26 22 40	1060	Felt at Dapa.
547	4	iPEZ iPN SNE? LE F	10 28 56 29 07 33 21? 35 48 13 10	2920?	Dilatation(?) Data after P from the Wiechert.
548	5	iPZ ePNE iN iZ iSEZ F	15 51 48 48 52 28 53 41 55 00 16 20	1900	Compression.
552	7	iPZ ePE iSN iSE LNE MN F	7 20 45 45 25 55 58 29 11 32 22 53	3580	Compression.

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## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
	Sep. 1941				
554	8	iPZ ePN ePE SNEZ F	2 56 38 39 40 52 3 04	110	Compression. Felt very slightly in Manila.
557	9	iPZ iPE iPN iN iE SNE LE ME F	7 27 16 17 18 29 34 50 32 54 37 45ca 40 17ca 10 10	4030	Compression from SE. Data after P from the Wiechert. Region of 6°S: 152°E by USCGS.
558	9	iPZ ePNE iSNE F	16 03 46 48 04 08 11	175	
561	10	iPZ ePN ePE SNEZ F	22 05 17 17 18 14 39 23 50	7860	Dilatation.
563	12	ePNEZ SNZ MN F	2 25 45 28 22 31 05ca 3 15	1510	
564	12	iPEZ ePN iN SNE LN F	7 06 24 24 07 35 09 57 12 10ca 9 10	2090	Compression from SE.
567	13	iPZ ePNE SNE F	0 04 54 54 08 25 53	2120	
568	13	iPZ SE F	3 29 34 33 12 4 25	2210	Compression.
572	14	ePNE SNE iN LNE F	4 13 03 16 51 18 02 19 36ca 6 08	2280	





MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY,--Continued.

No.	Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
	Sep. 1941				
573	14	iPN ePE SE LN MNE F	13 37 44 44 42 14 45 06ca 47 32ca 14 42	2970	
577	16	ePNZ ePE SNE LNE ME	21 50 38 39 22 00 22 14 30ca 21 00ca	8310	Compression.
	17	F	0 40		
578	17	iPNEZ iN SNE F	6 51 25 52 29 54 12 8 30	1580	Compression from SE S from the Wiechert.
580	18	iPZ PNE SNEZ F	2 09 26 28 13 22 3 50	2470	Compression.
581	18	iPZ PE iE SNE LE F	13 34 09 11 37 56 41 53 51 16ca 15 30	6170	Dilatation. <i>Correction</i>
					iP <sub>1</sub> 'NEZ 13 34 09 P <sub>2</sub> 'Z 35 09 LNE 14 32 ca Dist- 18480 km
582	18	iPZ SNE F	18 29 56 40 09 19 32	8910	
583	20	iPZ SNEZ F	15 09 12 10 32 26	510	Dilatation.
585	21	iPZ ePNE SNEZ F	2 52 02 02 24 3 05	175	Dilatation.
586	21	ePNEZ SNEZ F	3 23 57 24 17 30	160	
590	21	PNEZ SNE F	6 22 36 24 56 52	1290	



## M A N I L A , P . I .

## SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued,



No.	Date	Phase.	Greenwich Time h. m. s.	Dist. Km.	Remarks.
	Sep. 1941				
594	21	iPEZ iPN SNE	23 43 46 47 47 28	2260	Compression(?)
	22	F	0 38		
595	24	iPEZ iPN iE SNE MNE F	1 09 52 53 13 12 16 31 27 20ca 3 20	5040	
598	24	ePEZ SN F	18 31 08 35 28 19 22	2820	
602	25	iFZ ePNE SNE LE F	18 00 46 46 10 55 26 30ca 19 22	8955	Compression(?)
603	26	iPZ ePNE SE F	7 12 57 13 05 17 16 8 25	2810	
604	26	ePNEZ SNEZ F	12 09 23 39 15	125	Felt at Naujan, Mindoro.
605	28	iPNEZ SNE F	9 58 29 48 10 50	145	Dilatation. S from the Wiechert. 14° 40'N: 119° 40'E, h=100 Km. by Manila, Tagaytay and Baguio. Felt on Corregidor Island and slightly in Manila.
607	29	P?NEZ SNE F	11 07 30 11 35 28	2610?	Disturbed by microseisms.
608	29	P?NEZ SNE F	17 24 04 27 36 18 15	2130?	Disturbed by microseisms.
610	30	PNEZ SNEZ F	11 05 21 43 15	175	Felt at Palanan.

Thirty-two insignificant or undecipherable disturbances on the following days of September: 5th(3), 7th, 8th(2), 10th(2), 12th(3), 13th(2), 14th, 15th, 16th, 17th, 20th, 21st(6), 24th(2), 25th(3), 29th, and 30th(2).