

Year 1918, No.1.

January 1st to 3rd 1918

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

$\phi=14^{\circ} 34' 41''$ N. $\lambda=120^{\circ} 58' 33''$ E. $h=2.40$ ms. Alluvium.

Instrument: Wiechert's astatic Pendulum (1,000 Kgs.)

	T_0	S	$\frac{-F}{T_0^2}$
A_N	5.9	2.340	0.024
A_E	5.3	1.783	0.092

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Δ	Remarks.
				h.	m.	s.		A_N μ	A_E μ		
1	2	Iv	eP	23	01	58					
2	3	III Iv	eP	13	09	06				SW Luzon and Mindoro. Maxima and end lost b by the force of the shock and Wiechert record spoiled until 0h 18 ^m of the next day.	
3	3	Iv	eP F	13	26	42 29				SW Luzon and Mindoro. From Vicentini seismo-graph.	
4	3	Iv	eP F	13	41	54 45				Do.	
5	3	Iv	eP F	14	01	03 03				From Vicentini seismo graph.	
6	3	Iv	eP F	14	40	04 43				SW Luzon and Mindoro. From Vicentini seismo-graph.	
7	3	II Iv	eP E L F	15	06	40 58 07 05 14	3	419		Do.	
8	3	Iv	eP F	15	22	10 24				Do.	
9	3	Iv	eP F	16	08	25 11				Do.	
10	3	Iv	eP F	17	18	24 21				Do.	
11	3	Iv	eP L L F	17	48	32 49 49 38 54	3	208		Do.	
12	3	Iv	eP F	18	02	44 05				Do.	
13	3	Iv	eP F	18	45	10 49				Do.	
14	3	Iv	eP F	19	18	02 20				Do.	
15	3	Iv	eP F	20	19	01 21				Do.	



SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		AN μ	AJE μ		
16	3	II _v	eP	22	06	57	3	782	704		SW Luzon and Mindoro. From Vicentini seismo graph.
			L		07	15					
			FN		07	27					
			FE		07	33					
17	3	I _v	eP	22	31	02	3		195		Do.
			L		31	20					
			FE		31	23					
			F		36						
18	3	I _v	eP	22	38	07					Do.
			F		41						
19	4	I _v	eP	1	19	12					SW Luzon and Mindoro.
			F		21						
20	4	I _v	eP	1	48	39					Do.
			F		51						
21	4	I _v	eP	3	41	25					Do.
			F		44						
22	4	I _v	eP	6	13	03					Do.
			F		15						
23	4	I _v	eP	6	22	20					Do.
			F		25						
24	4	I _v	eP	7	11	00					Do.
			F		13						
25	4	I _v	eP	7	58	22					Do.
			F		8	00					
26	4	I _v	eP	11	26	12					Do.
			F		29						
27	4	I _v	eP	14	49	21					Do.
			F		51						
28	4	I _r	e	15	56	22					
			F		16	21					
29	4	I _v	eP	17	38	36					Naga (SE Luzon).
			F		42						
30	4	I _v	eP	19	58	33	3	65			SW Luzon and Mindoro.
			L		58	51					
			FN		58	55					
			F		20	02					
31	5	I	e	13	45						
			F		14	02					
32	5	I _v	eP	14	17	08					SW Luzon and Mindoro.
			F		19						
33	5	I _v	eP	23	23	10					
			F		26						
34	6	I _v	eP	1	45	43					SW Luzon and Mindoro.
			F		48						
35	7	I _v	eP	18	49	07					Ambos Camarines (SE Luzon).
			F		52						
36	10	I _v	eP	9	52	22					
			F		54						
37	10	I _v	eP	13	09	28					
			F		11						
38	12	I _v	eP	10	35	45					
			F		38						

Year 1918, No.3.

January 12th to 23rd, 1918.

MANILA, P. I.
SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Δ	Remarks.
				h.	m.	s.		A _N μ	A _E μ		
39	12	I _v	eP	18	51	40					
			F		53						
40	12	I _v	eP	19	01	00					
			F		04						
41	15	I _r	eP	15	31	50					
			S		35	12					
			L		37	23					
			M _N		37	49	14	11			
			M _E		38	27	11		14		
			F	16	17						
42	15	II _v	eP	19	22	01					W Luzon. Maxima and end in E-W component lost by the force of the shock.
			L		22	32					
			M _N		22	35	3	545			
			F		37						
43	16	I _v	eP	1	40	10					
			L		40	41					
			M _N		40	46	3	80			
			F		47						
44	16	I _v	eP	2	37	08					
			F		45						
45	16	II _v	eP	6	00	36					SE Luzon.
			L		01	15					
			M _N		01	48	4	121			
			M _E		01	54	3		117		
			F		18						
46	16	I _v	eP	10	53	46					
			F	11	03						
47	16	I _v	eP	15	04	37					
			F		08						
48	17	I _v	eP	7	11	32					
			F		14						
49	18	I _r	eP	10	40	36					
			L		42	52					
			F	11	03						
50	18	I _v	eP	15	50	51					
			F		53						
51	18	I _v	eP	20	02	38					
			F		05						
52	19	I _v	eP	3	03	46					
			F		06						
53	21	I _r	eP	19	50	00					
			S		53	37					
			L		56	11					
			M _N		56	51	11	65			
			M _E		57	54	10		54		
			F	21	06						
54	22	I _v	eP	1	35	06					
			F		39						
55	22	I _v	eP	1	40	20					
			F		44						
56	23	I _v	eP	18	14	38					
			F		17						



SEISMOLOGICAL BULLETIN OF THE OBSERVATORY. --Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		μ _N	μ _E		
57	24	I _v	eP	3	02	05	7 5	77	59		E visayas and Mindanao.
			L		03	36					
			M _L		03	46					
			M _S		03	58					
		F		15							
58	25	I _v	eP	20	43	02					
			F		45						
59	27	I _v	eP	0	30	24					
			F		33						
60	29	I _v	eP	3	53	22	4 5	33	39		
			L		54	16					
			M _E		54	32					
			M _L		54	52					
			F	4	13						
61	29	I _v	eP	13	38	46					
			F		42						
62	30	III _r	i	21	24	44	6 6	1,121	603		
			S		29	44					
			L		32	29					
			M _L		32	30					
			M _S		32	32					
			F	22	53						

February 1st to 7th, 1918.

63	2	I _v	eP	5	05	32					
			F		08						
64	4	I	e	18	07	22					
			F		36						
65	6	I _v	eP	17	58	36					
			F	18	03						
66	7	I _v	eP	2	00	35	3 3	109	98		
			L		00	47					
			M _L		00	52					
			M _S		00	52					
			F		06						
67	7	III _v	iP	5	22	44	5 4	1,333	942		E Mindanao.
			IL		24	26					
			L		25	10					
			M _L		25	21					
			F	7	33						



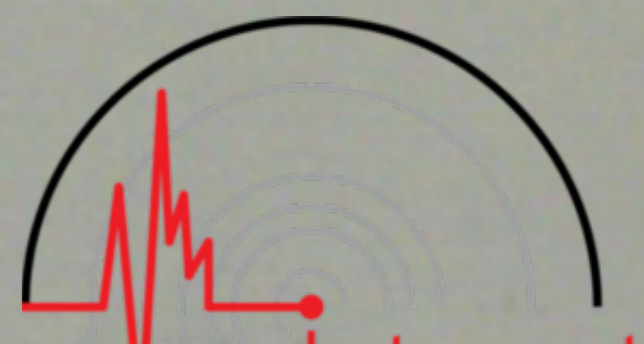
No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		AN μ	AE μ		
68	7	Iv	eP F	22	07	00 13					
69	8	Iv	eP F	4	34	58 38					
70	9	Iv	eP F	5	44	06 47					
71	9	Iv	eP F	13	35	46 38					
72	9	Ir	e F	20 21	51	48 22					
73	10	IIv	eP L ME ML F	10	30	24 32 30 32 37 32 42 11 03	4 4	101	205		
74	10	Iv	eP F	18	12	06 15					
75	12	Ir	e F	3	06	48 31					
76	12	Iv	eP F	11	36	36 39					
77	13	Ir	eP S L ME ML F	2	37	28 42 40 46 44 48 46 50 42 3 34	14 14	21	18		
78	13	IIIr	eP S F	6	09	29 11 50 8 20					China, L and maxima in both components lost by the force of the shock, the pens being thrown out.
79	13	Ir	eP S L ME ML F	8	29	54 32 02 33 50 34 00 34 34 57	13 13	32	27		China.
80	13	Iv	eP L F	9	05	37 06 15 09					Legaspi (SE Luzon).
81	13	IIr	eP S L ME ML F	20	28	18 30 38 31 54 32 28 32 57 21 19	15 14	151	87		China.

Year 1918, No.6.

February 13th to 28th, 1918.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



International
Seismological
Centre

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		A_{LW} μ	A_{SE} μ		
82	13	I _r	eP S L F	22	04	38 07 02 09 00 40					
83	14	I	e F	2	51	25 3 09					
84	14	I _v	eP F	11	51	06 54					
85	15	I _v	eP F	2	34	32 39				Aparri (NE Luzon).	
86	16	I _v	eP F	2	53	52 56					
87	17	I _v	eP F	8	07	20 12				Palanoc (Masbate Island).	
88	18	I _v	eP F	8	30	11 33					
89	18	I _v	eP F	9	56	25 59					
90	19	I _r	e F	16	30	00 17 10					
91	22	I _v	eP F	16	42	34 44					
92	23	I _v	eP F	6	07	06 10					
93	24	I _v	eP F	9	02	38 05				Cape Bojeador (NW Luzon).	
94	25	I _v	eP F	11	05	18 08					
95	25	I _v	eP L M _N F	11	18	56 19 14 19 15 23	3	30			
96	27	I _v	eP F	9	48	38 53					
97	27	I	eP S M _N F	9	54	42 57 02 59 38 10 40	13	17		S or SE Mindanao.	

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.



$\phi=14^{\circ} 34' 41''$ N. $\lambda=120^{\circ} 58' 33''$ E. $H=2.40$ ms. Alluvium.

Instrument: Wiechert's astatic Pendulum (1,000 Kgs.)

	T_0	ξ	$\frac{F}{T_0^2}$
A_H :	5.9	2.340	0.024
A_E :	5.3	1.783	0.092

No.	Date	Char-acter	Phase	Greenwich mean time	Period	Amplitude		Δ	Remarks.
						A_H μ	A_E μ		
98	1	I _v	eP F	H/ M/ S/ 13 19 18 22					
99	2	I _v	eP F	2 35 32 38					
100	2	I _v	eP F	13 30 46 34					Cuyo Island.
101	5	I _v	e F	21 24 39					
102	6	I _v	eP F	17 40 10 42					
103	8	I _v	eP F	5 41 09 43					
104	9	I _v	eP L L ₁ L ₂ F	8 17 10 18 14 19 15 29	6	18			Saxar, Leyte and NE Mindanao.
105	10	I _v	eP F	14 28 08 32					
106	10	I _v	eP F	14 37 04 43					
107	11	I _v	eP F	6 28 56 31					
108	12	I _v	eP F	12 45 49 48					
109	13	I _v	eP F	12 27 32 32					
110	14	I _v	eP F	10 14 48 17					
111	16	I	e F	13 56 13 14 47					
112	16	I _v	eP F	18 57 20 59					
113	19	I _r	e F	6 04 22 42					
114	20	I _r	eP L L ₁ L ₂ F	1 20 16 27 20 27 49 58	6	12			



MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		μ	μ		
115	20	I _v	eP F	2	54	07 57					
116	20	I _v	eP L M ₁ M ₂ F	10	33	15 33 04 18 50	4 5	106	77		Naga (SE Luzon).
117	22	I _v	eP F	11	20	10 22					
118	22	I _v	eP F	19	24	06 26					
119	23	I _r	e L F	0	20	09 25 49					
120	24	I _v	eP L M ₁ M ₂ F	1	06	42 07 14 20 18	3 3	185	167		
121	24	I _v	eP F	5	18	42 25					
122	24	I _v	eP F	16	29	26 32					
123	25	I _v	eP F	13	44	05 46					
124	26	I _v	eP F	7	20	53 24					
125	27	I _r	e S L M ₁ M ₂ F	3	55	00 58 24 03 06 46	8 7	23	19		
126	27	I _r	e F	23	21	42 54					
127	29	I _v	eP F	16	06	45 11					
128	30	I _v	eP F	15	34	38 36					
129	31	I _v	eP F	18	37	26 40					



MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

$\phi=14^{\circ} 34' 41''$ N. $\lambda=120^{\circ} 58' 33''$ E. $h=2,40$ ms. Alluvium.

Instrument: Wiechert's astatic Pendulum (1,000 Kgs.)

	T_0	λ	$\frac{r}{T_0^2}$
A_{II}	5.9	2.340	0.024
A_{IE}	5.3	1.783	0.092

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Δ	Remarks.
				h.	m.	s.		A_{II} μ	A_{IE} μ		
130	1	I_r	eP L F	10	10	22 19 29					
131	3	I_v	eP L M_E F	3	09	20 35 38 13	3		75		
132	4	I_v	eP L M_N F	17	47	34 57 06 54	3	35			Baguio (W Luzon).
133	5	I_v	eP F	10	28	51 32					
134	6	I	eP F	4	25	49 40					Butuan (N Mindanao).
135	6	I_v	eP F	19	41	32 44					
136	7	II_v	eP L M_E F	13	29	17 38 50 48	3	341			
137	8	III_d	eP L	17	35	53 15					Central Luzon. Maxima and end in both components lost by the force of the shocks.
138	10	II_r	eP S L M_E M_N F	2	09	19 38 57 38 44 56	6 6	250	333		

Year 1918, No. 11.

April 23rd to 30th, 1918.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		μ^N	μ^E		
152	23	I _r	eP S L LN F	15	31	24 00 56 29 10	7	12			
153	24	II _v	eP L	2	16	54 33				SE Luzon. Maxima and end in both components lost by the force of the shocks.	
154	24	I _v	eP L LN F	20	36	24 37 39 41	2	76			
155	25	I _v	eP F	16	32	11 35					
156	25	I	eP F	22	50	27 12					
157	26	I	eP F	13	17	38 53					
158	27	I _v	eP F	3	19	20 22					
159	30	I _v	eP F	7	14	49 20					



MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

$\phi=14^{\circ} 34' 41''$ N. $\lambda=120^{\circ} 58' 33''$ E. $h=2.40$ ms. Alluvium.

Instrument: Wiechert's astatic Pendulum (1,000 Kgs.)

	T_0	ξ	$\frac{-r}{T_0^2}$
A_N	5.6	2.768	0.028
A_E	5.5	2.032	0.076

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Δ	Remarks.
				h.	m.	s.		A_N μ	A_E μ		
160	4	II _r	eP	6	07	44					
			S		09	53					
			L		10	26					
			MN		10	46	4	517			
			ME		11	16	5		391		
			F	7	20						
161	10	I _v	eP	17	29	11					
			L		29	28					
			MN		29	32	2	75			
			ME		29	35	2		70		
			F		35						
162	13	I _r	eP	3	46	49					Davao (SE Mindanao).
			L		48	44					
			F		4	05					
163	13	I _v	eP	14	10	11					
			L		10	26					
			MN		10	42	2	101			
			F		15						
164	14	I	eP	19	21	47					
			F		37						
165	15	I _v	eP	4	08	36					
			F		17						
166	15	I _v	eP	16	05	34					NW Luzon.
			F		11						
167	16	II _v	eP	1	43	48					
			L		45	43					
			MN		46	21	4	73			
			F		59						
168	16	I _v	eP	4	08	39					
			F		14						
169	19	I _v	eP	0	32	14					
			F		45						
170	19	I	eP	17	43	20					
			F		18	05					



SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		μ	μ		
171	20	II _u	e	14	55	57				La Serena (Chile).	
			L	15	52	08					
			M ₁		52	54	24		8		
			M _{N1}		57	44	25	11			
			M _{N2}		58	58	25	10			
			F	16	01	18	25		7		
172	20	II _r	eP	18	09	41					
			S		15	38					
			L		20	39					
			M _N		21	47	7	147			
			M _E		24	30	8		74		
			F	20	01						
173	21	I	e	11	32	15					
			F	12	06						
174	21	I _r	ePS	19	10	40				Sanar, Leyte and E Mindanao.	
			L		13	12					
			M _N		13	54	8	92			
			M _E		13	58	8		59		
			F		51						
175	22	I _r	e	6	41	57					
			L		47	09					
			M _N		47	38	6	38			
			F	7	31						
176	23	I _u	e	12	27	09					
			S		36	41					
			L		51	32					
			M _N		55	16	24	8			
			F	13	50						
177	25	I _r	eP	19	49	12					
			S		53	00					
			L		55	13					
			M _N		56	19	9	23			
			F	20	55						
178	26	I _r	ePS	19	47	00					
			L		51	03					
			M _N		51	18	4	21			
			M _E		51	18	5		9		
			F	20	11						
179	30	I _v	eP	0	18	44				N Luzon.	
			L		19	38					
			M _E		19	43	3		17		
			M _N		19	46	3	20			
			F		28						
180	31	I _v	eP	4	26	56					
			F		30						
181	31	I _r	e	8	53	48					
			L		59	46					
			F	9	11						

Year 1918, No. 14.

June 1st to 11th, 1918.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

$\phi=14^{\circ} 34' 41''$ N. $\lambda=120^{\circ} 58' 33''$ E. $h=2.40$ ms. Alluvium.

Instrument: Wiechert's astatic Pendulum (1,000 Kgs.)

	To	ζ	$\frac{-I}{T_0^2}$
A_N :	6.62	2.726	0.021
A_E :	6.03	2.378	0.037

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Δ	Remarks.
				h.	m.	s.		A_N μ	A_E μ		
182	4	I _r	eP L F	4	10	20 45 56					
183	4	I	e F	17	22	58 16					
184	5	I _v	eP L M _E M _N F	6	44	12 34 36 44 52	3 3	134	97		
185	5	I	e F	22	40	23 13					
186	7	I	e F	4	57	38 07					
187	7	I	e F	14	44	29 09					
188	8	I _v	eP F	15	07	24 10					
189	8	I _r	eP S L M _E M _N F	20	16	06 12 50 32 41 37	10 11	23	16	Off the south coast of Mindanae.	
190	9	I _v	eP F	18	49	12 52					
191	10	I	e F	15	42	33 12					
192	10	I _v	eP F	22	49	41 53					
193	11	I _v	eP F	6	47	36 52				Aparri (NE Luzon).	



SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Remarks.
				h.	m.	s.		μ	μ	
194	11	I _v	eP F	19	48	23 51				
195	12	II _v	eP L ME ME F	7	47	11 49 07 13 02	2 2	766	385	SE Luzon.
196	15	I _v	eP L ME ME F	5	50	33 57 07 28 00	4 4	109	108	
197	15	II _v	eP L ME ME F	10	21	44 05 17 26 39	4 4	531	580	
198	16	I _r	eP L F	5	18	58 00 56				
199	18	I _v	eP F	0	54	31 57				
200	18	I _v	eP L ME ME F	16	55	55 07 10 16 01	3 3	43	47	
201	19	I _v	eP F	1	00	45 03				
202	19	I _v	eP F	6	39	46 42				
203	19	I _v	eP F	20	39	52 51				
204	20	I _v	eP F	5	17	31 21				
205	20	I _v	eP F	7	05	56 09				
206	21	I _r	eP S L ME ME F	5 6	59 03 04 05 05	49 53 32 00 10 45	6 6	37	14	

Year 1918, No.16.

MANILA, P. I.

June 21st to 30th, 1918.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		μ	μ		
207	21	I _v	eP F	14	30	30 35					
208	21	II _v	eP L M _E M _N F _N	15	29	23 31 16 31 22 32 18 16 25	6 6	171	158	E Mindanae.	
209	22	I _v	eP F	10	52	21 56					
210	22	I	e F	22	25	20 40					
211	23	I	e F	0	45	42 1 03					
212	23	I _v	eP F	23	11	19 15					
213	24	I _v	eP L M _E	2	58	40 59 06 59 15	3		26	End overtaken by following earthquake.	
214	24	I _v	eP L M _E F _N	3	01	00 01 47 02 08 13	3	21			
215	24	I _r	e S L M _E M _E F _N	14	54	12 59 10 15 02 38 03 00 03 22 40	8 8	16	12		
216	29	I _v	eP F	1	32	12 36					
217	29	I _v	eP L F	8	04	31 04 51 09					
218	30	I _v	eP F	8	39	11 42					

Year 1918, No. 17.

July 1st, to 3rd, 1918.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

$\phi = 14^{\circ} 34' 41''$ N. $\lambda = 120^{\circ} 58' 33''$ E. $h = 2.40$ ms. Alluvium.

Instrument: Wiechert's astatic Pendulum (1,000 Kgs.)

	T_0	ϵ	$\frac{-\epsilon}{T_0^2}$
A_N :	6.62	2.726	0.021
A_E :	6.03	2.378	0.037



No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Δ	Remarks.
				h.	m.	s.		A_N μ	A_E μ		
219	1	III _v	iP	6	10	24				Eastern Visayas and Mindanao.	
			L		12	16					
			ME1		12	28	6		703		
			MN1		12	47	6	1,143			
			ME2		13	43	6		829		
			MN2		13	45	6	1,229			
			MN3		14	48	6	1,129			
			ME3		15	30	6		788		
		F	8	10							
220	2	I _r	e	17	16	22					
			S		20	28					
			L		23	04					
			F		55						
221	2	I _v	eP	17	57	23				Butuan (N Mindanao).	
			L		58	52					
			MN		59	16	6	16			
			F		18	11					
222	2	I _v	eP	19	17	53					
			F		25						
223	2	I _v	eP	23	09	23					
			F		28						
224	3	III _r	eP	6	58	00					
			iS	7	02	24					
			iL		04	28					
			ME1		06	12	8		788		
			MN1		06	13	10	1,107			
			MN2		07	39	8	1,167			
			ME2		07	52	11		897		
			MN3		09	00	10	1,064			
			ME3		12	15	11		849		
			C		8	08	38				
		F	10	22							
225	3	I	e	14	55	51					
			F		15	22					
226	3	I _v	eP	17	24	00					
			L		24	15					
			MN		24	18	3	129			
			F		30						

Year 1918, No. 18.

July 3rd to 10th, 1918.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Remarks
				h.	m.	s.		AN u	AE μ	
227	3	Iv	eP F	19	12	44 17				
228	5	Iv	eP F	23	31	28 33				
229	6	Iv	e F	14	34	46				
230	6	Iv	e F	20	19	42				
231	7	Iv	eP L ME ML F	12	03	28 46 48 49 07	2 2	156	126	
232	7	Iv	eP F	13	37	14 39				
233	8	IIr	e iE1 iN1 iE2 iN2 iS iN3 iE3 L ME1 MN1 ME2 MN2 C F	10	28	16 30 35 30 50 31 22 33 28 33 39 35 53 36 22 37 00 41 11 41 58 42 44 43 07 11 14 29 53	5 6 6 7 8 8 13 11 11 10	390 357 349 471 658 685 1,049 678 1,009		
234	8	Iv	eP F	15	17	24 26			Butuan (N Mindanao).	
235	9	Ir	eP S L ME ML F	1	58	09 00 12 00 50 01 03 01 11 20	6 9	230	209	
236	9	Iv	eP F	3	07	24 20				
237	10	Iv	eP L ME ML F	2	09	39 56 57 22 17	4 3	350	182	
									NE Mindanao, Samar and Leyte.	



No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Remarks
				h.	m.	s.		A_H μ	A_E μ	
238	10	I _v	eP L M _E F	21	45	43 55 04 50	3		114	
239	15	I	e F	0	46	28 33				
240	15	II _r	eP S L M _N M _E F	16	21	16 21 53 51 02 53	6 7	328	264	Off the western coast of Ilocos.
241	16	I	M _L F	20	26	35 43	6	27		
242	17	I _v	eP F	0	09	37 12				
243	17	I _v	eP L M _N M _E F	13	56	16 46 10 12 31	6 6	109	118	
244	17	I _v	eP F	16	41	00 44				
245	18	I _v	e F	2	11	18 24				
246	18	I _v	e F	10	13	15 27				
247	18	I _v	e F	22	44	22 54				
248	20	I _r	e L M _L M _E F	12	45	51 21 47 21 07	8 8	23	18	
249	20	I _v	eP L M _E M _N F	13	32	21 18 06 53 58	5 8	36	26	
250	20	I _v	eP F	15	20	52 29				

Year 1918, No. 20.

July 20th to 28th, 1918.



MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich			Period	Amplitude		△	Remarks.
				mean time	h.	m.		s.	μ		
251	20	I _v	eP	15	56	52					
			F	16	10						
252	20	I	e	17	39	32					
			F		54						
253	21	II _r	e	6	17	23					
			S		22	29					
			L		23	38					
			M _{E1}		24	28	6		77		
			M _{N1}		24	39	5	79			
			M _{N2}		25	19	7	96			
			M _{H2}		25	44	7		84		
			C	7	18						
			F	8	21						
254	21	I _r	eP	9	52	21					
			L		59	18					
			F	10	55						
255	21	I _v	eP	23	32	13					
			F		36						
256	22	I _v	eP	4	15	18					
			L		15	38					
			M _H		15	42	2		64		
			M _N		15	46	2	63			
			F		19						
257	22	I _v	eP	4	19	40					
			F		23						
258	23	I _r	e	13	35	17					
			M _H		41	26	20		7		
			M _N		41	34	18	10			
			F		58						
259	25	I _r	e	20	57	52					
			S	21	04	09					
			L		10	08					
			M _N		11	12	17	5			
			M _H		13	01	16		11		
			F		40						
260	26	I _v	eP	23	05	51					
			L		06	11					
			M _N		06	12	2	213			
			M _H		06	12	2		156		
			F		12						
261	27	I _v	eP	16	18	43					
			F		21						

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Remarks.
				h.	m.	s.		μ_N	μ_E	
262	29	I _v	eP L F	9	46	34 48 55				
263	29	I _v	e F	11	27	46				
264	29	II _r	eP iS iL M _{N1} M _{E1} M _{N2} M _{E2} C F	16 17	56 01	14 06 50 38 05 49 58 19 50	11 8 10 10	136 103 177	82	
265	31	I _v	eP L M _E F	4	53	38 07 09 02	3		22	Naga (SE Luzon).
266	31	I _v	eP L M _N M _E F	9	17	42 45 46 46 20	2 2	58	93	
267	31	I _v	eP F	13	18	17 20				
268	31	I _v	eP F	14	56	37 20				
269	31	I _r	eP F	22	07	30 40				

Year 1918, No.22

August 1st to 8th, 1918.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

$\phi=14^{\circ} 34' 41''$ N. $\lambda=120^{\circ} 58' 33''$ E. $h=2.40$ ms. Alluvium.

Instrument: Wiechert's astatic Pendulum (1,000 Kgs.)

	T_0	ξ	$\frac{r}{T_0^2}$
A_N	6.62	2.726	0.021
A_E	6.03	2.378	0.037

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Δ	Remarks.
				h.	m.	s.		A_N μ	A_E μ		
270	5	I _v	eP	21	48	22	2	90	51		
			L		48	29					
			M _N		48	31					
			M _E		48	31					
			F		51						
271	6	I _v	eP	4	00	21					
			F		04						
272	6	I _v	eP	11	19	52					
			F		22						
273	7	I _v	eP	6	44	29	6	88	97		Tigaon (SE Luzon).
			L		45	08					
			M _N		45	23					
			M _E		45	27					
			F		59						
274	7	I _v	eP	7	01	32					
			F		03						
275	7	II _v	eP	9	30	32	2	714			
			L		30	51					
			M _N		30	55					
			F		43						
276	7	I _v	eP	9	44	16					
			F		47						
277	7	I _v	eP	17	11	42					
			F		14						
278	8	I _r	e	9	55	28	19	34			
			S	10	01	16					
			L		07	54					
			M _E		08	42					
			F	11	04						
279	8	I _v	eP	12	42	12					
			F	13	02						



No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h	m.	s.		A _N μ	A _E μ		
280	9	I _v	eP F	15	27	38 30					
281	9	I	eP F	19	56	00 20 39					
282	10	I _v	eP F	18	39	00 41					
283	11	I _r	eP S L M _N M _E F	23	30	24 33 02 34 00 34 36 35 16 0 13	14 13	36	51	Sulu Sea.	
284	12	I _r	eP M _E M _N F	5	04	16 09 22 09 56 37	9 9	17	15		
285	14	I _v	eP	9	19	38				Baguio (W Luzon). End overtaken by following earthquake.	
286	14	I _v	eP L F	9	20	33 21 32 25					
287	15	I	eP F	2	40	30 3 02					
288	15	III _r	eP	12	20	38				Celebes Sea. End over taken by following earthquake.	
289	15	II _r	eP	13	02	48				Celebes Sea. End over taken by following earthquake.	
290	15	II _r	eP F	15	28	40 16 58				Celebes Sea.	
291	15	II _r	eP F	17	32	43 19 23				Celebes Sea.	
292	15	I _r	eP F	19	52	36 20 06				Celebes Sea.	
293	15	I _r	eP F	20	08	56 32				Celebes Sea.	
294	15	I _r	eP L F	20	36	13 38 00 31 20				Celebes Sea.	



No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Remarks.	
				h.	m.	s.		μ^W	μ^E		
295	15	I _r	eP F	22	45	38 23 12				Celebes Sea.	
296	15	I _r	eP F	23	23	50 37				Celebes Sea.	
297	15	I _r	eP F	23	42	49 59				Celebes Sea.	
298	16	I _r	eP F	0	02	06 33				Celebes Sea.	
299	16	I _r	eP F	1	58	00 2 22				Celebes Sea.	
300	16	II _r	eP S L M _{N1} M _{E1} M _{N2} M _{E2} M _{E3} M _{N3}	3	28	08 29 48 30 53 31 10 32 47 33 17 34 43 35 48 36 07		7 11 9 9 10 10	143 114 264 181 182 393		Celebes Sea. End over- taken by following earthquake.
301	16	I _r	eP	4	26	21					Celebes Sea. End over- taken by following earthquake.
302	16	I _r	eP F	4	50	00 5 22					Celebes Sea.
303	16	I _r	ePS L F	7	25	22 28 12 8 23					Celebes Sea.
304	16	II _r	eP L M _N M _E	8	38	17 40 00 41 49 42 10		14 12	389 247		Celebes Sea. End over- taken by following earthquake.
305	16	I _r	eP	9	27	43					Celebes Sea. End over- taken by following earthquake.
306	16	I _r	eP F	10	01	00 36					Celebes Sea.
307	16	I _r	eP	10	38	39					Celebes Sea. End over- taken by following earthquake.
308	16	I _r	eP F	11	09	29 49					Celebes Sea.



No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Δ	Remarks.
				h.	m.	s.		μ_N	μ_E		
309	16	I _r	eP F	16	56	29				Celebes Sea.	
310	16	I _r	eP F	22	48	20				Celebes Sea.	
311	17	I _r	eP F	3	34	15				Celebes Sea.	
312	17	I _r	eP F	4	46	42				Celebes Sea.	
313	17	I _r	eP F	7	13	38				Celebes Sea.	
314	17	I _r	eP F	8	29	27				Celebes Sea.	
315	17	I _r	eP F	18	54	00				Celebes Sea.	
316	18	I _r	eP F	3	53	00				Celebes Sea.	
317	18	I _r	eP S L LH LH F	6	07	44	8	143		Celebes Sea.	
318	18	I _r	eP F	8	10	54				Celebes Sea.	
319	18	I _r	eP F	9	14	29				Celebes Sea.	
320	18	I _v	eP F	22	13	00				Tigaon (SE Luzon).	
321	19	I _r	eP F	1	19	06				Celebes Sea.	
322	19	I _r	eP F	4	20	05				Celebes Sea.	
323	19	I _r	eP F	7	14	34				Celebes Sea.	
324	19	I _r	eP F	17	11	00				Celebes Sea.	
325	19	I _r	eP L LH LH F	17	30	30	9	36		Celebes Sea.	
					32	06	6	57			
					33	17					
326	19	I _r	eP F	18	22					Celebes Sea.	
327	20	I _r	eP S L LH LH F	18	52	16				Celebes Sea.	
					19	09					
					0	00					
					02	16					
					04	02	6	74			
					04	22	5	55			
					04	22					
328	20	I _r	eP F	1	20					Celebes Sea.	
					2	50					
					3	12					
329	20	I _r	eP F	7	24	08				Celebes Sea.	
					43						
330	20	I _r	eP F	12	55	48				Celebes Sea.	
					13	38					

Year 1918, No. 26.

August 21st to 31st, 1918.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		AN μ	AE μ		
331	21	I _r	eP	0	20	53					Celebes Sea.
			F	1	02						
332	21	I _r	eP	14	39	40					Celebes Sea.
			F		58						
333	21	I _v	eP	21	57	17					
			F	22	08						
334	22	I _r	eP	19	47	19					Celebes Sea.
			F	20	10						
335	22	I _r	eP	23	02	50					Celebes Sea
			F		12						
336	23	II _r	e	6	45	41					
			S		53	05					
			L	7	02	32					
			LN1		03	38	15	53			
			ME1		04	14	19		49		
			ME2		09	52	15		31		
			LN2		13	27	15	40			
			C		42	36					
			F	8	26						
337	23	I _r	eP	17	01	12					Celebes Sea.
			F		16						
338	23	I _r	eP	22	40	44					
			F	23	19						
339	25	I _r	eP	0	31	47					Celebes Sea.
			L		33	48					
			LN		34	05	7	47			
			ME		34	11	6		45		
			F	1	43						
340	25	I _v	eP	2	50	02					
			F		54						
341	25	I _v	eP	12	55	24					
			F	13	06						
342	26	I _r	eP	6	10	29					Celebes Sea.
			F		21						
343	26	I _r	eP	8	54	13					Celebes Sea.
			F	9	06						
344	26	I _v	eP	11	46	18					
			F	12	00						
345	26	I _v	eP	19	11	24					
			F		14						
346	26	I _v	eP	21	11	15					
			F		13						
347	27	I _v	eP	1	54	50					
			F	2	05						
348	27	I _v	eP	20	02	12					
			F		23						
349	31	I _v	eP	1	46	10					
			F		58						
350	31	I _r	eP	21	59	09					Celebes Sea.
			F	22	40						

Year 1918, No. 27.

September 1st to 7th, 1918

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

$\phi=14^{\circ} 34' 41''$ N. $\lambda=120^{\circ} 58' 33''$ E. $h=2.40$ ms. Alluvium.
Instrument: Wiechert's astatic Pendulum (1,000 Kgs.)

	T_0	ξ	$\frac{-\xi}{T_0^2}$
A_{IV}	6.62	2.726	0.021
A_{IE}	6.03	2.378	0.037

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Δ	Remarks.
				h.	m.	s.		A_{IV} μ	A_{IE} μ		
351	1	I _r	eP	20	01	24				Celebes Sea.	
			L		05	00					
			M _N		05	31	8	31			
			M _E		06	03	7	25			
		F		41							
352	2	I _v	eP	2	34	12					
		F		52							
353	2	I _r	e	14	21	18					
			S		26	00					
			L		29	00	11	37			
			M _N		30	05	8	29			
			M _E		32	16					
		F		15	41						
354	3	I _r	eP	15	11	18					
			L		15	54					
			F		16	17					
355	4	I _v	eP	1	51	32					
			F		2	01					
356	4	I _v	eP	17	20	18				Celebes Sea.	
			L		23	40					
			F		47						
357	5	II _r	e	7	07	57					
			S		09	49					
			L		11	41	9	349			
			M _N		12	17	9	226			
			M _E		13	05					
		F		8	08						
358	6	I _v	eP	3	16	57				Baguio (W Luzon).	
			F		21						
359	7	I _r	e	7	17	44					
			L		21	45					
			M _N		22	35	10	94			
			M _E		23	28	11	62			
			F		8	23					



No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		A_N μ	A_E μ		
360	7	III _r	eP	17	24	00				Maxima and end in N-S component lost by the force of the shock.	
			S		30	36					
			L		36	04					
			ME1		41	17	15		555		
			ME2		46	25	17		836		
			ME3		48	00	17		1,024		
			ME4		49	28	17		932		
ME5		53	18	15		858					
		F	21	48							
361	8	I	eL	0	35						
			F		49						
362	8	I _v	eP	2	38	43				W Luzon.	
			F		44						
363	8	I _r	e	5	50	22					
			F	6	21						
364	8	I _v	eP	13	16	28					
			F		18						
365	8	I _r	e	22	29	54					
			F	23	18						
366	9	I _r	e	12	11	40					
			F		49						
367	9	I _r	e	14	26	44					
			F	15	21						
368	9	I _v	eP	21	56	20					
			F	22	02						
369	10	I _v	eP	15	50	35					
			F		54						
370	10	I _v	eP	21	46	42					
			L		47	05					
			ME		47	07	3		178		
			F		52						
371	11	II _v	eP	4	03	39				Central Mindanao.	
			L		11	44					
			ME		12	32	8		390		
			ME		13	00	11	550			
			F		5	08					
372	11	I _v	eP	6	01	06					
			F		03						
373	12	I _v	eP	9	55	00					
			F	10	03						



No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		μ^N	μ^E		
374	13	IIv	eP L	6	55	44 45				Batanes Islands. End overtaken by following earthquake.	
375	13	Iv	eP F	7	09	30 47				Batanes Islands. Aftershock.	
376	13	IIv	eP L MN ME F	7	51	52 08 07 31 42	5 5	453	482	Batanes Islands. Aftershock.	
377	13	IIv	eP L F	11	04	50 52 08				Batanes Islands. Aftershock	
378	14	Iv	e S L MN ME F	17	12	48 42 00 02 27 16	6 7	30	56		
379	15	Iv	eP F	6	07	28 24				Batanes Islands. Aftershock.	
380	15	Iv	e L F	18	05	30 50 49					
381	16	Iv	eP L MN ME F	5	57	16 52 17 39 31	5 5	210	223	Batanes Islands. Aftershock.	
382	17	Iv	eP F	13	53	42 00					
383	18	Iv	eP L ME MN F	22	20	06 41 10 37 14	4 5	124	109	Batanes Islands. Aftershock.	
384	19	Iv	eP F	2	20	49 35					
385	19	Iv	eP F	2	39	32 43					
386	20	Iv	eP F	3	27	44 30					

Year 1918, No.30.

September 21st, to 30th, 1918.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		A_N μ	A_E μ		
387	22	I _v	eP	9	02	58	3 4	119	96		
			L		03	11					
			M _E		03	12					
			M _N F		03	13 07					
388	22	I _r	e	10	00	36					
			L		05	00					
			F		42						
389	23	I _v	eP	1	19	44					
			F		23						
390	24	I _v	e	0	07	20					
			F		24						
391	24	I _v	eP	6	38	42					Iba (W Luzon),
			F		44						
392	29	I _r	e	12	19	36	7 7	31	19		
			S		25	12					
			L		29	05					
			M _N		29	10					
			M _E		29	28					
			F		13	18					
393	30	I	eP	13	51	44					
			L		54	04					
			F		14	05					
394	30	I _r	e	18	02	12	8 6	39	26		
			S		07	24					
			L		10	38					
			M _N		11	15					
			M _E		11	15					
			F		41						
395	30	I _r	e	18	44	52	7 7	34	21		
			S		49	50					
			L		52	38					
			M _N		52	59					
			M _E		53	27					
			F		19	42					



	T_0	ϵ	$\frac{-F}{T_0^2}$
A_N :	6.62	2.726	0.021
A_E :	6.03	2.378	0.037

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Δ	Remarks.
				h.	m.	s.		A_N μ	A_E μ		
396	2	III _d	iP F	13	23	14 39				S Luzon. The maxima lost by the force of the shock.	
397	3	I _v	eP F	14	05	06 07					
398	6	I _v	eP L M _E M _N F	12	51	14 33 39 42 58	3 3	78	82		
399	7	I _v	eP F	10	11	23 13					
400	9	II _r	eP S L M _E M _N F	9	22	54 00 02 11 18 18	7 8	180	226		
401	10	I	e F	2	00	11					
402	10	I _v	eP F	21	08	08 15				NW Luzon.	
403	11	II _r	e S L M _{E1} M _{E1} M _{E2} M _{E2} M _{E3} M _{E3} C F	14	34	22 52 06 18 27 07 22 00 16 04 16 05 17 17	26 25 18 22 17 19	29 37 57	20 37 28	Perte Rico.	
404	11	I _v	eP F	17	24	00 29					
405	13	I	e F	12	52	13 22					
406	13	III _v	eP L M ₁ F	14	30	15 34 45 51	3	921			



No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		A _N μ	A _E μ		
407	14	I _v	eP L MN F	10	37	35 53 55 41	3	94			
408	14	I ₁	e S L ME MN F	12	11	54 22 11 09 45 56	8 8	40	34		
409	16	I _v	eP L ME MN F	20	10	05 40 46 48 32	5 6	246	171		
410	18	I _v	eP F	10	33	47 36					
411	19	I _r	e F	3	42	28 12					
412	19	I _v	eP F	5	41	22 44					
413	19	I _v	eP F	11	07	22 12				NW Luzon and Batanes Islands.	
414	22	I _v	eP L ME MN F	8	11	00 36 42 48 33	6 6	299	167	Butuan (N Mindanao).	
415	24	I _v	eP L ME MN F	7	30	29 05 17 18 39	44 44	143	123	SE Luzon.	
416	21	I _v	eP F	9	58	08 01					
417	24	I _v	eP L ME MN F	10	44	20 48 52 54 50	3 3	126	137	Romblon Island.	
418	24	I _v	eP F	19	14	30 16					
419	24	I _r	eP MN ME F	19	22	38 55 11 42	6 5	41	32		



MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		AN μ	AE μ		
420	24	Iv	eP F	21	04	38 06					
421	28	Iv	eP F	4	02	40 08					
422	25	Ir	eP L M1 M2 F	19	06	16 09 44 10 35 10 57 29	11 11	136	104	S Mindanao.	
423	26	Iv	eP S L MN ME F	17	01	16 02 42 03 36 05 22 06 14 26	8 8	59	36	Central Mindanao.	
424	26	Iv	eP S L F	18	46	51 47 52 48 45 19 00					
425	27	Ir	e S L ME MN F	15	36	07 42 36 48 00 48 12 49 04 17 07	13 13	36	70		
426	27	IIr	e S L M1 M1 M2 M2 C F	17	13	17 18 38 21 26 24 36 25 26 31 21 33 28 19 06 30 20 11	10 8 9 10	707 746	719 675		
427	28	Iv	eP F	13	19	00 21					
428	28	Iv	eP F	14	28	49 40					
429	29	Iv	eP F	17	38	50 51				Surigao (NE Mindanao).	

Year 1918, No.34.

November 1st to 7th, 1918.

MANILA, P.I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

$\phi=14^{\circ} 34' 41''$ N. $\lambda=120^{\circ} 58' 33''$ E. $h=2.40$ ms. Alluvium.

Instrument: Wiechert's astatic Pendulum (1,000 Kgs.)



	T_0	C	$\frac{-F}{T_0^2}$
A_N :	6.62	2.726	0.021
A_E :	6.003	2.378	0.037

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Δ	Remarks.
				h.	m.	s.		A_N μ	A_E μ		
430	1	Iv	eP L ME MN F	2	00	02 48 05 09 22					Aparri (NE Luzon).
431	1	Iv	eP L MN ME F	18	10	29 00 17 20 31	3 3	44			
432	2	Iv	eP F	3	13	10 38					S Formosa.
433	2	Iv	eP F	7	50	42 56					
434	2	I	eP F	10	13	26 36					
435	2	Iv	eP F	20	34	36 45					
436	3	Iu	e F	11	25	35 32					
437	3	Iv	eP F	12	35	00 42					
438	3	Iv	eP F	12	50	00 59					
439	5	Iv	eP F	1	49	57 57					
440	5	Iv	eP F	5	16	32 22					
441	6	Iv	eP F	22	11	38 20					
442	7	Iv	eP F	1	43	28 55					
443	7	Iv	eP F	17	36	18 42					
444	7	Iv	eP L MN ME F	17	44	42 56 30 40 02	3 3	186			190



No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		A _N μ	A _E μ		
445	7	I _v	eP F	20	08	58 13					
446	8	II _r	eP iN iE iN iE iN iE iE iN iS iN iE iE iN L M _{N1} M _{E1} M _{N2} M _{E2} M _{N3} M _{E3} C F	4	45	38 48 06 37 45 35 48 31 36 00 18 24 49 08 58 10 48 12 01 11 31 24 36					
							5 5 5 5 6 6 6 7 7 7 7 11 9 13 17 17 18	464 390 230	295 219 259		
447	9	I _v	eP L F	19	27	46 30 00 57					SW Mindanao.
448	9	I _v	eP L F	20	43	00 12 02					
449	10	I _r	e F	16	54	17 18					N Formosa.
450	11	I _r	e F	4	34	48 45					N Formosa.
451	11	I _r	e S L M _E L _L F	7	09	14 12 57 06 21 58				34	
452	11	I _r	e L M _N F	13	24	37 40 00 37				44	
453	11	I _v	eP L M _E M _N F	21	31	37 55 57 58 36				144	
							2 2	84			



No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		AN μ	AE μ		
454	12	Iv	eP F	22	04	38 12					
455	18	Iv	eP L MN ME F	1	29	39 30 34 30 39 39	3 3	113	123		
456	18	IIIv	iP L MN ME	18	46	46 47 45 48 07	7 6	1,472	1,199	Tigaon (SE Luzon). End lost by the force of the shock.	
457	19	Ir	e F	5	28	22 44					
458	19	Iv	eP L ME F	8	32	22 32 38 32 40 35	2		95		
459	20	Iv	eP F	1	14	36 22				Samar Island.	
460	21	IIv	eP L ME MN F	0	35	50 36 42 37 06 37 12 1 09	5 5	330	233	Samar, Leyte and NE Mindanao.	
461	21	Iv	eP F	3	35	02 38					
462	21	Iv	eP F	3	46	33 49					
463	22	Ir	e F	15	56	20 16 42					
464	22	I	e L F	22	21	23 24 00 23 08				Butuan (N Mindanao).	
465	23	I	e F	0	38	1 14					
466	23	Iv	eP L ME F	1	53	22 53 53 54 03 2 04	2		73	Canarines (SE Luzon).	
467	23	IIIr	iE iE iN iE iN iS iL ME1 MN1 MN2 ME2 C F	23	02	46 03 20 03 48 04 47 05 04 05 54 06 54 06 57 06 58 07 43 08 44 53 09 0 44	6 6 7 7 7 7 7 7 7 7 8 6	423 430	233 541 1,185 1,107 1,129 1,028		
	24		F	0	44						



MANILA, P. I.
SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		AN μ	AE μ		
468	24	I _v	eP F	11	34	17 36					
469	24	I _r	eP L F	17	26	44 28 50 18 07					Davao (SE Mindanao).
470	25	I _v	eP L ME MN F	12	08	12 08 58 09 38 09 46 22	3 3	117	102		N Luzon.
471	28	I _r	eP MN	5	32	46 41 38					End overtaken by fol- lowing earthquake.
472	28	I _v	eP L ME MN F	5	54	07 54 28 54 34 54 39 6 17	2 2	150	138		
473	29	I _v	eP L MN ME F	7	00	29 00 48 01 35 01 44 10	4 5	120	108		W Luzon.
474	29	I _r	e L ME F	10 11	56 07	18 52 33	14		7		
475	30	I	e F	1	40	59					
476	30	I _r	e F	7	13	53					
477	30	I _v	eP L MN ME F	9	19	33 20 05 20 07 20 09 25	2 2	86	55		

Year 1918, No. 33.

December 1st to 3rd, 1918.



MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

$\phi=14^{\circ} 34' 41''$ N. $\lambda=120^{\circ} 58' 30''$ E. $h=2.40$ ms. Alluvium.

Instrument: Wiechert's astatic Pendulum (1,000Kgs.)

	T_0	ϵ	$\frac{-I}{T_0^2}$
A_N	6.32	2.725	0.021
A_E	6.05	2.378	0.037

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Δ	Remarks.	
				h.	m.	s.		A_N μ	A_E μ			
478	1	Iv	eP	1	04	00						
			L		04	30						
			ME		04	47	3		99			
			MN		04	50	4	111				
479	1	Ir	e	2	43	56						
			S		49	22						
			L		53	30						
			ME1		55	00	9		42			
			MN1		55	26	9	56				
			MN2		57	07	8	34				
			ME2		57	40	7		25			
F	3	53										
480	1	Iv	eP	3	34	16					Merged into the preceding quake.	
			F		38							
481	1	Iv	eP	10	43	44						
			L		44	04						
			ME		44	06	2		110			
			F		48							
482	2	Iv	eP	8	59	47					SE Luzon.	
			F		9	04						
483	2	Ir	eP	10	07	30					F on next record.	
484	2	IIv	eP	10	34	28					SE Luzon. End overtaken by following earthquake.	
			L		35	09						
			ME		35	26	3		277			
			MN		35	34	3	193				
485	2	Iv	eP	10	42	12					F not discernible.	
			L		42	41						
486	2	Iu	e?	10	51							
			ME1		11	12	44	24				33
			MN1		14	22	17	34				
			ME2		14	23	19		26			
			MN2		15	38	19	34				
			F		12	04						
487	3	Iv	eP	12	27	28						
			F		35							



No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Remarks.
				h.	m.	s.		AN u	AE u	
500	9	I _r	eP F	4	15	49 55				
501	9	I _r	e L	18	14	04 22 08				End overtaken by following earthquake.
502	9	I _r	e L ME MN F	19	02	50 11 12 12 46 13 05 20 18	7 7	23	22	
503	9	I _v	eP F	20	47	04 53				
504	10	I _r	e F	17	08	31 46				
505	11	I _v	eP L ME F	10	04	21 05 51 06 39 24	9		33	
506	11	I _v	eP F	14	56	16 15 11				
507	12	II _v	eP L ME MN F	16	38	57 39 40 40 41 40 48 57	5 5	686	1,260	
508	13	I _v	e F	19	38	52 57				
509	13	I _v	eP F	22	20	14 33				Samar Island.
510	14	I _v	eP F	16	01	26 25				
511	14	I _r	e L ME F	18	48	26 55 42 56 18 19 32	6		96	
512	15	I _v	eP F	8	45	00 51				SE Luzon.
513	16	I _r	e F	3	14	23 51				
514	16	I _r	e F	10	14	17 28				N Formosa.

Year 1918, No. 41.

December 16th to 31st, 1918.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.--Continued.



No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Remarks.
				h.	m.	s.		A_N μ	A_E μ	
515	16	Ir	e F	21	24	00				
					49					
516	18	Iv	eP F	15	17	15				
					20					
517	18	Iv	eP L MN F	17	18	24	7	41		
					20	08				
					20	38				
					41					
518	18	Ir	e F	21	41					
				22	14					
519	19	Iv	eP F	12	01	08			Legaspi (SE Luzon).	
					09					
520	20	Iv	eP F	0	36	42				
					41					
521	21	Iv	eP F	4	41	32				
					55					
522	21	Iv	eP F	19	55	00			W Mindanao.	
				20	06					
523	22	Iv	eP F	17	26	38				
					29					
524	23	Iv	eP L MN ME F	3	13	46	4	53	W Mindanao.	
					15	08				
					15	13	4			
					15	15		34		
					26					
525	23	Iv	eP F	3	55	46				
					59					
526	23	Iv	eP F	4	42	52				
					48					
527	25	Ir	e F	10	28					
					48					
528	28	Iv	eP F	8	10	18				
					21					
529	30	Ir	e F	7	25					
					49					
530	31	Iv	eP F	22	07	20				
					14					