

Ref 2794

Year 1916, No.1.

January 1st to 8th, 1916.
4

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 static Pendulum (1,000 Kgs.)

	T_0	ξ	$\frac{r}{T_0^2}$
AN:	6.1	3.89	0.023
AE:	6.6	2.32	0.050

No.	Date	Character	Phase	Greenwich mean time			Period	Amplitude		Δ	Remarks.
				h.	m.	s.		A_N μ	A_E μ		
1	1	II _v	eP	6	22	24					
			L		22	40					
			M _E		22	45	4			398	
			M _N		23	07	3	259			
			F		33						
2	1	I _v	eP	7	24	55					Batangas (S Luzon).
			L		25	10					
			M _E		25	14	4			300	
			M _N		25	34	3	193			
			F		35						
3	1	II _r	eP	13	27	54					
			iS		36	27	6-8				
			iL		46	00	7-9				
			M _N		49	41	13	247			
			M _E		52	12	11			235	
			M _E		53	03	13			234	
			M _N		54	22	13	313			
			F		16	48					
4	2	I _v	eP	8	11	52					
			L		12	17					
			M _E		12	26	2			13	
			F		15						
5	3	I _v	eP	8	26	50					
			F		30						
6	4	II _v	eP	3	12	54					Panay Island.
			L		13	42					
			M _E		14	28	7			699	
			M _N		15	14	7	627			
			F		52						
7	4	I _v	eP	12	11	55					
			F		14						
8	4	I _v	eP	12	56	22					
			F		59						

Year 1916, No. 2.

January 5th to 16th, 1916.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		AN μ	AG μ		
9	7	Iv	eP L F	17	38	12 40 40				Bolinao (W Luzon).	
10	9	Iv	eP F	8	02	28 06					
11	9	Iv	eP F	16	24	05 26					
12	10	Iv	eP F	7	04	38 07					
13	10	Iv	eP F	13	28	54 31					
14	13	IIr	eP S L L ₁ L ₂ F	6	23	34 27 49 32 00 33 22 35 08 8 01	7 8	349 345		New Guinea? Felt in the eastern coasts of Samar and Mindanao. The maxima are difficult to be measured on account of the superimposed following earthquake.	
15	13	IIr	eP S F	8	25	46 30 00 10 25				New Guinea? Felt in the eastern coasts of Samar and Mindanao. L and maxima in N-S component lost by the force of the shock and the same phases in N-W component hidden by the preceding quake.	
16	13	I _r	e(PS)	21	52	13					
16	13	I _r	eP S L L ₁ L ₂ F	10 11	56 00	02 07 04 12 05 22 06 01 46	7 6	39	43	New Guinea?	
17	13	I _r	e(PS) L L ₁ L ₂ F	21	52	13 15 27 42 22 17	6 7	32	20		
18	14	Iv	eP F	11	11	19 13					

Year 1916, No. 3.

January 17th to 26th, 1916.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

No.	Date.	Char-acter	Phase	Greenwich mean time	Period.	Amplitude		△	Remarks.
						AN	AE		
				h. m. s.					
19	17	Iv	eP F	19 05 53 08					
20	17	Iv	eP F	19 17 23 19					
21	18	I	e F	14 06 22					
22	19	Ir	e S L M M F	19 04 10 20 17 20 21 56 22 37 54	11 19	13	11		
23	21	Iv	eP L L M M F	14 39 53 40 52 41 42 41 43 44	3 3	9	8		
24	22	Iv	eP F	12 51 54 54					
25	24	Iu	e S? L? L M M F	7 07 07 15 18 39 12 46 28 46 52 8 30	15 15	32	18		
26	25	Iv	eP F	6 11 24 13					
27	25	Iv	eP S L L M M F	11 43 06 44 53 47 06 47 12 48 44 58	6 6	24	41		
28	25	Iv	eP L L M M F	14 29 36 30 41 31 36 32 12 37	5 5	13	9		
29	26	Ir	e L L M M F	8 25 29 50 31 42 47	20 15	6	5		

Year 1916, No.4.

January 26th to 31st, 1916.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		μ	μ		
30	26	I	e	12	36						
			F	13	31						
31	26	Iv	eP	20	26	48					
			L		27	24					
			F		33						
32	27	Iv	eP	17	24	12					Nueva Caceres (SE Luzon).
			L		24	40					
			M		24	52	3	27			
			F		29						
33	28	Iv	eP	19	08	24					
			F		13						
34	30	Iv	eP	18	37	29					
			F		40						
35	30	I	e	20	48						
			L		57	40					
			M	21	01	23	6		5		
			L		02	56	7	7			
			F		24						
36	31	Iu	e	18	19						
			F	19	17						
37	31	Iv	eP	23	01	55					
			F		05						

Miguel Saderra Masó,

Assistant Director of the Weather Bureau.

Year 1916, No. 5.

February 1st to 3rd, 1916.

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 static Pendulum (1,000 Kgs.)

	T_0	C	$\frac{F}{T_0^2}$
A_N :	6.1	3.89	0.023
A_E :	6.6	2.32	0.050

Ref 2595

No.	Date	Character	Phase	Greenwich mean time			Period	Amplitude		Δ	Remarks.
				h.	m.	s.		A_N μ	A_E μ		
38	1	I _r	eP	2	25	48	10 8	6	4		
			S	28	30						
			L	31	15						
			M _{NE}	35	08						
			M _N	35	20						
39	1	II _r	e	7	40	33	5-7 6-8 10 10	227	332		
			S	44	00						
			L	48	24						
			M _{NE}	51	38						
			F	51	44						
40	1	I _r	eP	21	50	32	7 7	13	9		
			S	53	48						
			L	57	00						
			M _{NE}	58	22						
			F	22	01	06					
41	2	I	e	14	53						
			F	15	08						
42	2	I _v	e	19	42						
			F	20	01						
43	2	I _r	eP	21	28	33	8 13	27	39		
			S	31	18						
			L	33	05						
			M _{NE}	34	38						
			F	22	17						
3	3	I _v	eP	2	56	08					
			F	3	02						

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.-Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Remarks.
				h.	m.	s.		A_T μ	A_E μ	
45	3	I _v	eP	10	06	14	7 6	15	12	
			L		10	28				
			M ₁		12	02				
			F		12	13				
46	3	I _r	eP	19	08	10	6 6	11	22	
			S		10	13				
			L		12	16				
			M ₁		12	58				
			F		12	02				
47	4	I _v	e	19	04	28				Eastern Mindanao.
			F			12				
48	5	I _v	eP	4	31	22	5 5	39	49	
			L		32	53				
			M ₁		33	20				
			F		33	38				
49	5	I _v	eP	8	09	40	6 5	79	60	Aparri (NE Luzon).
			L		10	33				
			M ₁		12	30				
			M ₂		13	13				
			F		20					
50	5	I _v	eP	9	15	52	2	30		
			L		16	16				
			M ₁		16	19				
			F		23					
51	5	I _r	eP	14	35	16	17		3	
			S		38	12				
			L		40	31				
			M ₁		47	42				
			F		15	18				
52	6	I _r	e	11	00	00	6 7	29	33	
			S		03	27				
			L		06	44				
			M ₁		07	43				
			F		08	05				
53	6	I _v	e	12	43					
			F		13					08
54	6	I _u	e	22	01	34	16 15	10	10	
			S		09	39				
			L		17	06				
			M ₁		20	26				
			F		20	50				
7				0	08					

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		
55	7	Iv	eP F	0	26	00 33					
56	8	I	e F	0	31	1 02					
57	8	I	e F	15	54	16 21					
58	10	I _r	eP S L M ₁ M ₂ F	2	10	40 14 27 19 15 20 19 20 27 56	14 12	21	14		
59	10	I _r	eP S L M ₁ M ₂ F	11	01	18 05 32 09 53 16 00 39	13		4		
60	11	I	e F	8	49	37 9 21					
61	11	Iv	eP F	16	42	19 45					
62	14	II _r	eP S L M ₁ M ₂ F	10	04	37 07 18 08 38 12 04 12 49 11 32	4-5 5-6 18 11	178	76	Butuan (N Mindanao).	
63	14	I _r	e M ₁ M ₂ F	17	54	18 06 02 06 02 35	10 12	15	17		
64	15	Iv	eP F	8	49	48 52					
65	15	I _r	e F	11	56	12 49					
66	16	I _r	eP L M ₁ F	3	56	00 57 14 59 17 4 08	6	7		Catbalogan (W Samar).	
67	16	Iv	eP F	12	29	37 31					

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		
68	18	I _v	eP F	15	36	17 30					
69	20	I _u	eP S L M ₁ M ₂ F ₁ F ₂	17 18	58 07	54 39 26 44 50 33	8-9 18 18	6	9		
70	21	I _r	e F	13 14	59 35	00				Sumatra.	
71	22	I _r	e M ₁ M ₂ F	9	17 22 22 46	06 44	6		7		
72	22	I	e F	15	39 51						
73	25	I _v	eP L M ₁ F	7	00 00 00 06	05 22 24	3	21			
74	25	I _v	eP F	7	07 09	41					
75	25	I _v	eP F	15	27 31	24					
76	26	I _v	eP L M ₁ F	2	13 14 14 19	50 07 19	1	76		Iba (W Luzon).	
77	26	I _v	eP L M ₁ F	4	13 14 14 17	50 07 16	1	24			
78	26	I _v	eP F	13	24 27	24					
79	27	I _v	eP F	5	57 59	23					
80	27	I _v	eP F	6	19 21	16					
81	27	I _u	e M ₁ M ₂ F	20 21	40 39 44 58 59 56	49 51 56 49 00	22 21 19 20	8 7	7 7		
82	28	I _v	eP F	15	14 17	57					
83	28	I _v	eP F	23	08 10	10					

Miguel Saderra Masó
Asst. Director, Weather Bureau.

Year 1916, No. 9.

March 1st to 7th, 1916.

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 static Pendulum (1,000 Kgs.)

	T_0	ξ	$\frac{1}{T_0^2}$
A_N :	6.1	3.89	0.023
A_E :	6.6	2.32	0.050

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Δ	Remarks.
				h.	m.	s.		A_N μ	A_E μ		
84	1	II _v	eP L M _H F	9	11	07 22 31 17	2		413		
85	1	I _r	eP S L M _L F	18	05	38 05 24 17 24	7	11			
86	4	I _v	e L M _H F	1	00	08 19 30 09	5	16			
87	4	I _r	eP S L M _H M _H F	7	17	31 48 04 45 36 01	18 16	7	7		
88	5	I _v	eP F	4	51	31 54					
89	5	I _v	eP L M _H F	15	05	34 46 54 10	2		18		Iba (W Luzon).
90	6	I _v	eP F	8	24	08 30					
91	6	I _v	eP F	9	16	11 23					
92	6	I	e F	22	13	31					
93	7	I _v	eP F	18	56	30 08					

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.-Continued.

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		△	Remarks.
				h.	m.	s.		A_{IV} μ	A_{TE} μ		
94	8	Iv	eP L M F	3	09	22 27 28 22	5		10		
95	8	Iv	eP L M F	23	27	07 39 18 39	7	8		Eastern Mindanao.	
96	10	Iv	eP L M F	21	45	10 52 56 51	3	7		N Luzon.	
97	11	Iv	eP F	19	02	00 04					
98	12	Iv	eP F	2	00	45 04					
99	12	Iv	eP F	6	24	47 27					
100	12	Iv	eP L M F	7	46	53 38 50				Aparri (NE Luzon).	
101	12	I	e F	11	22	37					
102	17	Iv	eP F	19	33	22 35					
103	18	Ir	eP L M F	1	02	43 50 28 57 27 32	9 10	12	5		
104	19	Iv	eP L M F	8	33	43 03 26 33 52	4 5	86	87		
105	19	I	e F	12	08	39					
106	19	Iv	eP F	17	29	18 31					
107	19	Iv	eP F	18	55	41 57					
108	19	Iv	eP L M F	23	58	56 31 03					
109	21	Iv	eP L M F	2	37	00 45 08 46	2		33		
110	21	Iv	eP F	7	44	04 46					
111	21	Iv	eP F	10	14	49 18					

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		
112	22	I _v	eP	9	58	00					
			F	10	00						
113	22	II _v	eP	19	45	14					
			F	19	45	39					
			F	19	47	33	7	243			
			F	19	47	34	7		283		
			F	20	12						
114	25	I _r	e	23	54	55					
			L	23	56	57					
			L	23	59	49					
	26		e	0	03	45	10		41		
			F	0	04	06	9	34			
			F	0	09	18	9	46			
			F	0	09	42	9		91		
			F	1	09						
115	26	L _v	eP	18	41	32					
			F	18	41	52					
			F	18	41	54	2		100		
			F	18	41	55	2	86		End overtaken by fol- lowing earthquake.	
116	26	I _v	eP	18	47	31					
			F	18	47	45					
			F	18	47	48	2		17		
			F	18	56						
117	27	I	e	12	33						
			F	12	44						
118	27	I _v	eP	18	20	40					
			F	18	21	16					
			F	18	22	19	5	11			
			F	18	37						
119	27	I _v	e	22	46						
			F	22	00						
120	28	I _v	eP	16	24	44					
			F	16	25	24					
			F	16	32					Laoag (NW Luzon).	
121	28	I _v	eP	22	42	24					
			F	22	44						
122	29	I _v	e(PS)	1	50	26					
			F	1	53	29					
			F	2	08					Butuan (N Mindanao).	
123	30	I _r	e	1	48	00					
			L	1	51	18					
			L	1	55	00					
			F	1	58	36	11		8		
			F	1	59	20	10	8			
			F	2	39						
124	30	I _v	eP	21	49	26					
			F	21	50	48					
			F	21	52	00					
			F	21	52	45	7	20		S Samar and NE Min- danao.	
			F	21	52	53	6		12		
			F	22	22						
125	30	I _v	eP	23	18	54					
			F	23	20	28					
			F	23	30						
126	31	I _v	eP	1	46	22					
			F	1	46	58					
			F	1	52						

Year 1916, No. 12.

April 1st to 11th, 1916.

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 static Pendulum (1,000 Kgs.)

Ref. 2795

	T_0	ϵ	$\frac{I}{T_0^2}$
A_N :	6.1	3.89	0.023
A_E :	6.6	2.32	0.050

No.	Date	Char-acter	Phase	Greenwich mean time	Period	Amplitude		Δ	Remarks.
						A_N μ	A_E μ		
				h. m. s.					
127	1	I _v	eP L M _E F	5 15 35 16 32 18 15 31	4		17		
128	3	I _v	e M _E	10 36 46 40 09	6		11		End overtaken by following earthquake.
129	3	I _v	e F	10 44 11 03					
130	6	I _v	eP F	1 38 11 41					
131	7	I _u	eP S L M ₁ M ₁ M ₂ M ₂ F	9 38 12 48 07 59 24 10 08 51 09 00 14 18 18 32 11 04	16 19 15 16	13	21 20		
132	9	I _v	eP F	18 32 55 36					
133	10	I _v	eP F	1 06 42 09					
134	10	I _v	eP L M _E F	20 40 42 41 00 41 10 45	1		28		
135	11	I _v	eP F	16 00 21 02					
136	11	I _v	eP L M ₁ F	17 14 03 14 26 14 28 18	1	33			

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		
137	12	I _r	eP F	9	23	17 53					
138	12	I _v	eP F	17	00	29 15					
139	14	I	e F	2	17	33					
140	14	I	e F	2	38	06 54					
141	14	II _v	eP L M ₁ M ₂ F	12	16	53 17 13 17 30 17 32 35	1 1	145	174	Central Luzon.	
142	14	II _v	eP L M ₁ M ₂ F	16	40	42 40 58 41 12 41 12 55	1 1	329	435		
143	15	I _v	eP L M ₁ M ₂ F	2	12	23 12 41 12 42 12 43 20	2 1	92	84		
144	15	I _r	e M ₁ F	9	25	36 36 56	16		4		
145	15	II _r	eP S L M ₁ M ₂ F	12	37	16 41 47 06 55 08 55 43 13 42	17 17	34	28		
146	15	I _r	eP S L M ₁ M ₂ F	15	02	00 04 22 07 00 08 32 08 43 16 08	6 7	77	63		
147	16	I _v	eP L M ₁ F	0	58	49 59 04 1 00 16 06	3		24		
148	16	I _v	eP F	16	54	54 57					

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		
149	17	I _v	eP L M ₁ F	16	52	28 44 48 55	2		34		
150	18	II _r	e S F?	4	12	19 32 22					
151	21	II _r	eP S L M ₁ M ₂ M ₃ F	11	36	57 32 07 05 19 12	8 8	113	134		
152	21	I	e F	14	05	24					
153	22	I	e F	9	54	08					
154	24	I _v	e L F	4	46	14 03 22					
155	24	I _u	e S? L? M ₁ M ₂ M ₃ L L F	8	21	43 16 24 19 50 45 17	18 20 18	6 7 12			
156	24	I _v	eP F	20	50	56 53					
157	24	I _v	eP F	21	46	32 49					
158	25	I _v	eP L	23	33	39 23				N Luzon. End overtaken by following earthquake.	
159	25	I _v	eP F	23	48	03 52					
160	26	I _r	e F	2	41	13 15					
161	27	I _v	eP F	19	19	29 22					
162	28	I _v	eP F	10	13	32 20				Camarines (SE Luzon).	
163	28	I _v	eP L L ₁ L ₂ F	20	21	07 44 29 29	3		21	NW Luzon.	
164	28	I _v	eP F	21	45	44 49				NW Luzon.	

Year 1916, No. 15.

May 1st to 8th, 1916.

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.

	T_0	δ	$\frac{r}{T_0^2}$
A_N :	6.1	3.89	0.023
A_E :	6.6	2.32	0.050

No.	Date	Char-acter	Phase	Greenwich mean time	Period	Amplitude		Δ	Remarks
						A_N μ	A_E μ		
165	2	Iv	eP F	h. m. s. 8 59 52 9 02					
166	2	I	e M _N M _E F	22 53 32 59 00 23 00 48 12	7 10	11	8		
167	3	Iv	e F	2 29 42					
168	3	Ir	eP S L M _N M _E F	4 38 16 41 07 44 06 45 54 46 42 5 08	10 9	11	10		
169	3	Iv	eP F	6 14 03 16					
170	5	Iv	eP M _N M _E F	18 55 40 19 00 44 08	9	7			
171	6	Iv	eP M _E F	7 30 22 31 46 44	5		10		
172	6	Iv	eP F	14 58 18 15 04					
173	7	IIv	eP L M _N M _E F	11 15 10 16 10 17 46 18 26 51	4 4	191	266		Aparri (NE Luzon).
174	8	Iv	eP F	11 58 03 12 01					
175	8	IIv	eP L M _N M _E F	12 56 13 56 28 56 30 56 38 13 06	2 2	125	299		S Luzon and N Mindoro.
176	8	Iv	eP F	14 54 18 56					
177	8	Iv	eP F	15 23 30 29					
178	8	Iv	eP F	17 25 58 29					

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		
179	8	I _v	eP F	17	29	51 33					
180	9	I _v	e F	0	47	1 01					
181	9	I _v	eP F	1	54	23 57					
182	9	I _r	eP S L M ₁ M ₂ M ₃ F	14	40	42 46 40 53 54 58 11 58 14 15 22	13 14	5	4		
183	10	I _v	eP F	14	48	53 51					
184	10	I _v	e F	21	56	22 05					
185	11	I _v	eP F	18	39	17 43					
186	13	I _v	eP F	0	49	11 52					
187	15	I _v	e F	0	02	18					
188	18	I _r	eP S L L ₁ L ₂ F	7	36	20 38 29 40 28 42 06 53	7	5			
189	20	I _r	eP S L L ₁ L ₂ F	7	17	10 19 37 22 28 23 38 46	9	6			
190	21	I _v	e(PS) L L ₁ L ₂ M ₁ M ₂ E F	11	55	29 58 00 58 53 59 00 12 17	4 5	39	49		
191	23	I _v	eP F	3	56	24 4 10					
192	23	I _v	eP F	22	09	42 18					

Butuan (Mindanao).

Year 1916, No. 17.

May 25th to 31st, 1916.

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		
193	25	I	e F	22	49						
				23	28						
194	26	I _v	eP L ME F	20	23	23	3	11		Cuyo Island.	
					24	16					
					24	42					
					30						
195	26	I	e F	21	01						
					26						
196	27	I _v	eP L ME F	16	17	03	2	49			
					17	20					
					17	23					
					22						
197	28	I _v	eP L ME F	12	12	00	2	9			
					12	34					
					12	44					
					18						
198	30	I _v	e F	13	47						
					56						
199	30	I _v	eP F	21	06	08					
					11						
200	31	I _v	e F	8	32						
					43						
201	31	I _v	eP L F	15	21	37					
					21	56					
					24						

Miguel Saderra Masó
Asst. Director, Weather Bureau.

Year, 1916, No. 18.

June 1st to 9th, 1916.

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 static Pendulum (1,000 Kgs.)

	T_0	S	$\frac{-r^2}{T_0^2}$
A_N :	6.1	3.89	0.023
A_E :	6.6	2.32	0.050

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Δ	Remarks.
				h.	m.	s.		A_N μ	A_E μ		
202	1	I	e F	2	43	52					
203	1	I _v	eP L M MN ME F	14	12	22 41 47 48 21	2 2	79	125		
204	1	I _v	eP F	20	25	15 27					
205	2	I _v	eP F	14	18	31 37					
206	3	I	e F	5	18	37					
207	5	I _v	eP S L MN F	3	06	28 30 22 53 28	7	21		Catbalogan (W Samar).	
208	8	I _v	eP S L MN ME F	6	27	12 36 00 15 31 52	6 5	43	49		
209	9	I _v	eP F	3	01	38 04					
210	9	II _r	eP S L MN ME F	21	26	58 09 16 09 35 54	7 7	92	92	SE Mindanao.	

Year 1916, No. 19.

June 10th to 21st, 1916.

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		
211	10	I _r	eP ME F	21	21	33 38 34	5		7		SE Mindanao.
212	11	I _v	eP L ME F	0	14	23 14 03 26	5		22		
213	12	I _v	eP L MN F	22	40	39 53 57 45	2	26			
214	14	I _v	eP L ME F	12	44	55 42 54 01	3		28		
215	15	I _r	e F	11	24	44 08					
216	15	I _v	e F	23	47	41 59					Butuan (Mindanao).
217	16	I	e F	4	30	22 49					
218	16	I _v	eP L ME F	16	51	42 11 15 59	2		32		
219	19	I _v	eP B ME MN F	2	25	12 34 38 47 30	2 3	39	18		
220	21	I _r	eP S L ME MN F	1	02	54 05 08 09 15 44	9 10	16	25		

Year 1916, No. 20.

June 21st to 30th, 1916.

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		
221	21	I	e F	7	16	32					
222	21	I _u	e S L ME F	21	51	53 22 03 03 16 23 19 07 23 11	15		10		
223	22	I _v	eP L MN F	6	15	24 16 26 17 42 23	2	12			
224	26	I _r	eP S L ME F	6	49	23 51 16 53 04 53 08 7 06	8		7		
225	27	I _v	eP L F	11	43	48 44 06 47					
226	29	II _r	eP S L ME MN F	10	49	42 51 43 53 41 54 18 54 57 11 43	6 6	79	92	SE Mindanao.	
227	29	I _r	eP S L ME F	13	17	36 20 07 22 55 23 55 42	7		14		
228	29	I _v	eP L F	19	43	00 43 17 45					
229	30	I _u	e L F	3	20	58 42 5 13					

Year 1916, No. 21.

July 1st to 9th, 1916.

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 static pendulum (1,000 Kgs.)

	T_0	ϵ	$\frac{I}{T_0^2}$
A_N :	6.1	1.93	0.050
A_E :	6.1	2.89	0.035

No.	Date	Char-acter	Phase	Greenwich mean time			Period	Amplitude		Δ	Remarks
				h.	m.	s.		A_N μ	A_E μ		
230	3	I _v	e L M _N F	19	05	44 26 41 17	4	8			
231	3	I	e L M _N F	22	53	00 04 09	13	4		Butuan (N Mindanao).	
232	5	I _v	eP L M _N M _E F	8	39	39 19 28 31	4 4	29		26	Ambos Camarines (SE Luzon). End over-taken by following earthquake.
233	5	I _v	eP L F	8	48	33 53 57					
234	6	II _v	eP L M _N M _E F	8	16	00 45 21 32 09	3 4	283		310	Ambos Camarines, Albay and Sorsogon (SE Luzon).
235	6	I _v	eP F	9	19	54 23					
236	6	I _v	eP L M _E F	9	42	04 49 06 54	2			60	Albay (SE Luzon).
237	6	I _v	eP L F	10	00	40 23 12					Albay (SE Luzon).
238	6	I _v	eP F	16	50	16 54					
239	8	I _r	e L M _N M _E F	9	44	29 42 23 42 21	5 6	69		35	

Year 1916, No. 22.

July 10th to 22nd, 1916.

MANILA, P. I.

SEISMOLOGICAL BULLETIN OF THE OBSERVATORY.- Continued.

No.	Date	Char-acter	Phase	Greenwich mean time	Period	Amplitude		△	Remarks
						A _N μ	A _E μ		
				h. m. s.					
240	10	II _v	eP L M _N M _E F	1 03 45 04 01 04 26 04 27 21	3 3	974	624		S Luzon.
241	11	I _v	eP F	7 26 17 28					
242	13	II _v	eP L M _N M _E F	15 01 02 02 13 05 06 05 14 56	9 7	336	141		Sulu Sea.
243	13	I _v	eP F	18 59 05 19 01					
244	14	I _v	eP F	9 41 14 43					
245	14	I _v	eP S L M _N M _E F	14 47 25 48 34 30 46 32 25 34 18 15 38	7 9	105	37		Sulu Sea.
246	16	I _v	eP F	5 25 43 28					
247	17	I _v	eP L M _N	0 59 42 1 00 16 02 22	4	11			End overtaken by fol- lowing earthquake.
248	17	I _v	eP F	1 08 23 24					
249	17	I _v	eP L M _N M _E F	8 39 56 40 35 41 29 41 34 53	3 3	79	42		NW Luzon.
250	20	I _r	e L M _N F	8 09 51 15 13 18 11 47	8	3			
251	21	I	e F	12 37 13 08					
252	21	I	e F	21 53 22 04					

Year 1916, No. 23.

July 23rd to August 5th, 1916.

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		
253	23	I _r	eP	10	18	53	12	9	4		
			S		23	11					
			L		25	52					
			M _N		28	08					
			M _E		28	12					
F		11	13	11							
254	25	I _v	eP	10	16	09					
			F		18						
255	26	I _v	eP	6	53	00					
			F		55						
256	27	I _r	eP	11	58	00	15	8	4	Malacca Peninsula.	
			S		12	02					21
			L			05					41
			M _E			06					22
			M _N			07					26
F			36	11							
257	28	I _v	eP	13	19	17					
			F		22						
258	29	I _v	eP	22	40	42					
			F		44						
259	30	I _v	eP	5	19	02					
			F		21						
260	31	I _v	eP	3	38	08					
			F		41						

August, 1916.

261	2	I _v	eP	1	33	55				
			F		36					
262	3	II _r	eP	1	36	39	7	142	87	
			S		41	36				
			L		46	22				
			M _N		48	07				
			M _E		48	09				
F		2	58	7						
263	3	I _v	eP	15	14	29				
			F		17					
264	5	I _v	eP	3	55	09	6	30	14	Butuan (N Mindanao).
			L		57	40				
			M _N		58	56				
			M _E		59	02				
F		4	22	7						
265	5	I _v	eP	4	29	18				
			F		31					

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		
266	7	I _v	eP L M _N F	7	08	40 53 30 19	3	9		Samar and Leyte Islands.	
267	7	I _v	eP S L M _N F	11	23	38 00 18 05 25	7	89		Samar and Leyte Islands.	
268	8	I _r	e F	4	30	28 02					
269	8	II _v	eP L	18	54	15 09				N Luzon. Maximum and end in both components lost by the pens thrown off through the force of shock.	
270	8	I _v	eP L F	23	03	32 56 08				Vicentini seismograph	
271	11	I _v	eP L M _N F	21	31	44 07 16 34	2	16			
272	14	II _v	eP L M _{NE} M _N	23	38	53 29 47 36	6 6	353	241	SE Luzon. End overtaken by the following earthquake.	
273	14	I _v	eP L M _{NE} M _N F	23	51	01 37 53 21 22	6 6	171	129	SE Luzon.	
274	15	I _v	eP F	17	31	11 34				SE Luzon.	
275	15	I _v	eP F	21	00	32 03					
276	16	I _v	eP L M _N F	11	39	53 42 46 46	5	7		Aparri (NE Luzon).	
277	16	I _v	eP F	22	16	25 19					

Year 1916, No.25.

August 17th to 31st, 1916.

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		
278	17	I _v	eP	1	48	17	4	15		NW Luzon.	
			L		48	50					
			M _N		49	42					
			F		53						
279	22	I _v	eP	20	37	20	4	22			
			L		37	32					
			M _N		38	00					
			F		40						
280	25	I _v	eP	8	03	53					
			F		06						
281	25	I _u	e	10	04	49	15	6			
			S		18	16					
			L		19	55					
			M _N		24	18					
			F		51						
282	26	II _v	eP	23	43	38	5	105	94	N Luzon.	
			L		44	27					
			M _E		44	51					
			M _N		45	03					
			F		57						
283	27	I _r	e	22	48	46	7	11			
			M _N		57	10					
			F		23	27					
284	28	II _r	e	6	47	17	13	46	21	End overtaken by following earthquake.	
			M _N		7	09					06
			M _E		09	17					16
285	28	II _r	eP	7	29	52	5	368	421		
			L		31	43					
			M _E		33	13					
			M _N		33	17					
			F		9	01					
286	28	I _v	eP	12	14	10					
			F		16						
287	29	I _v	eP	18	50	55	5	46			
			L		51	56					
			M _N		52	53					
			F		19	25					
288	30	I	e	23	15	11	8	4			
			M _N		21	30					
			F		28						