

Ref-2611



International
Seismological
Centre

No. 1.

From 1st to 17th January 1912

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1000 Kg.)

	T_0	ϵ
A_N	7	3.6
A_E	7	3

No.	Date	Character	Phase	Greenwich Mean Time	Period	Amplitude		Δ	Remarks.
						A_N	A_E		
1	1	I_d	eP F	6 46 \pm 48					
2	2	I	eP F	6 10 48 41					
3	4	I_r	eP eS L F	15 57 14 16 05 23 14 38 56	5-6				
4	6	I_d	eP iL F	11 17 02 17 15 19	1				
5	6	I_d	eP eL F	11 20 \pm 20 59 23	1-2				
6	8	I_d	eP iL M_N M_E F	5 34 46 35 16 35 18 35 18 38	2-3 2-3 2-3	18	16	2-3	
7	8	I	eP F	14 59 47 15 07					
8	10	I_r	eP F	10 06 48 08					Eqke, III in Camarines.
9	16	I_d	eP eL F	22 18 26 18 35 19					
10	17	I_d	eP iL M_N F	2 31 13 31 30 31 44 36	4	42			

No. 2.

From 17th to 20th January, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1000 Kg.)

	T_0	ϵ
A_N	7	3.6
A_E	7	3

No.	Date	Character	Phase	Greenwich		Period	Amplitude		Δ	Remarks.
				Mean	Time		A_N	A_E		
11	17	I_v	eP	18	39 47	3-4	18	7		Egke., IV at Aparri (NE of Luzon).
			eL		40 30					
			M_N		40 48					
			M_E		41 07					
			F		44					
12	18	I_v	iP	3	28 32	2	337	224		Southern Luzon and north Mindoro.
			iL		28 47					
			C_1		32 27					
			C_1		32 38					
			C_2		33 18					
			F		52					
13	18	I_v	eP	7	36 29	3	90			Southern Luzon and north Mindoro.
			iL		36 44					
			M_E		36 49					
			F		41					
14	18	I_d	eP	21	15 56					
			iL		16 09					
			F		19					
15	19	I_d	iL	1	34 56					
			F		38					
16	19	I_d	e	10	35 \pm					
			F		38					
17	19	I_d	eP	10	50 \pm	3	12			
			M_N		50 38					
			F		54					
18	20	I	eP	4	07 01					
			F		55					
19	20	I_d	eP	17	15 39	4-5	214	116		
			L		16 15					
			M_N		16 23					
			M_E		16 25					
			F		5					

No. 3.a

Jan 20th to 31st January, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1000 Kg.)

	T_0	ϵ
A_N	7	3.6
A_E	7	3

No.	Date	Character	Phase	Greenwich Mean Time		Period	Amplitude		Δ	Remarks.
							A_N	A_E		
20	20	I_d	i F	17 19 00 23						
21	20	I_d	e F	17 25 40 28						
22	22	I_d	eP iL M_N F	13 10 37 11 59 12 46 17	2 3	10				
23	25	I_d	eP iL M_N F	22 53 36 53 54 53 57 56	2	36				
24	26	I_d	e F	2 39 14 43						
25	26	I_r	P L M_N M_E F	14 ? ? 59 20 15 00 05 00 30 25	10-11 11 12	6	4			
26	26	I_v	eP M_N M_E F	17 57 53 18 00 42 01 00 15	6 6-7	16	10			Eqke., III, northern Mindanao.
27	28	I	e F	1 32 12 50						

M. Paderra H.

No. 36.

January, 1912.



Manila, P. I.

Seismological Bulletin of the Observatory.

Macroseisms not registered by the seismographs.

January	9th	At 20 ^h 29 ^m	Eqke., III at Butuan (N of Mindanao).
"	11th	At 14 ^h 14 ^m	Eqke., III in Cebu and Leyte.
"	24th	At 12 ^h 35 ^m	Eqke., III at Virac (Catanduanos Island).
"	25th	At 10 ^h 10 ^m	Eqke., III at Butuan (N of Mindanao).
"	29th	At 11 ^h 02 ^m	Eqke., III at Butuan (N of Mindanao).
"	30th	At 19 ^h 16 ^m	Eqke., IV, NE Mindanao and Leyte.

No. 4.

From 1st to 18th, February, 1912.

Manila, P. I.

International
Seismological
Centre

Seismological Bulletin of the Observatory.

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

h = 2.40 m.

Alluvium.

Instrument: Wiechert's static pendulum (1000 Kg.)

	T_0	ϵ
A_N	7	3.6
A_E	7	3

No.	Date	Character	Phase	Greenwich Mean Time	Period	Amplitude		Δ	Remarks.
						A_N	A_E		
28	1	I_v	eP	18 07 30	3	33	31		Pangasinan and Benguet Provinces.
			iS	07 52					
			eL	08 24					
			M_N	08 48					
			M_E	08 50					
		F	13						
29	1	I_v	eP	18 28 00	3	31			Pangasinan and Benguet Provinces.
			iS	28 23					
			L	29 10					
			M_N	29 14					
			F	33					
30	9	I	e	23 22 28					Movement in N-S component very slight.
			F	33					
31	15	I_d	eP	2 49 50	4	300			Northern Luzon.
			eL	50 42					
			M_E	52 08					
			F	3 12					
32	16	I_r	eP	9 33 \pm	11	6	5		
			eL	45 00					
			M_E	46 52					
			M_N	47 14					
			F	10 34					
33	17	I_d	eP	13 33 49	4	10			
			M_N	34 50					
			F	39					
34	17	I_d	eP	21 16 54	3-4	13			
			iS	17 12					
			M_N	17 52					
			F	21					
35	18	I	e	0 36 51					
			F	50					

No. 5 b.

February, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

Macroseisms not registered by the seismographs.

- | | | | | |
|------|------|--|----------------|-------------------------------|
| Feb. | 1st | at 6 ^h 45 ^m | Earthquake, II | at Legaspi (SE of Luzon). |
| " | 2nd | at 22 ^h 58 ^m 30 ^s | Eqke., II | at Butuan (N of Mindanao). |
| " | 8th | at 5 ^h 48 ^m | Eqke., III | at Luzon (Mariana Islands). |
| " | 11th | at 5 ^h 15 ^m | Eqke., III | eastern Bohol. |
| " | 12th | at 17 ^h 15 ^m | Eqke., III | eastern Bohol. |
| " | 13th | at 16 ^h 23 ^m | Eqke., IV | eastern Visayas. |
| " | 13th | at 16 ^h 03 ^m | Eqke., II | at Luzon (Mariana Islands). |
| " | 15th | at 19 ^h 45 ^m | Eqke., III | eastern Bohol. |
| " | 21st | at 15 ^h 21 ^m | Eqke., II | at Zamboanga (W of Mindanao). |
| " | 25th | at 7 ^h 15 ^m 15 ^s | Eqke., III | at Butuan (N of Mindanao). |
| " | 26th | at 1 ^h 11 ^m | Eqke., III | at Legaspi (SE of Luzon). |

No. 5.a.

10th to 29th February, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1000 Kg.)

	T_0	ϵ
A_N	7	36
A_E	7	3

No.	Date	Character	Phase	Greenwich Mean Time	Period	Amplitude		Δ	Remarks.
						A_N	A_E		
36	18	I_d	eP iL M_N F	11 59 00 59 16 59 44 12 05	3	9			
37	20	I	e F	17 03 26 16					
38	22	II_v	eP iL M_N F	15 40 24 40 50 41 18 49	2-3 3-4	55		Eqke., III, Benguet and Nueva Vizcaya Pro- vinces.	
39	22	I	eP iS iL M_N F	19 24 14 25 15 25 47 25 53 39	4 4 4	61			
40	22	I_v	eP eL M_N F	22 32 23 32 37 32 53 40	3 3	60		Eqke., IV at Calapan (NE of Mindoro).	
41	25	I	eP F	2 50 54 3 38					
42	25	I_d	eP eL M_N F	20 16 08 16 23 16 36 19	3	10			
43	27	I	e F	1 40 \pm 2 04					

M. Paderna H.

No. 6.

 From 1st to 11th, March, 1919.

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Alluvium.

Instrument: Wiechert's static pendulum (1000 Kg.)

	T_0	ϵ
A_N	7	3.6
A_E	7	3

No.	Date	Character	Phase	Greenwich		Period	Amplitude		Δ	Remarks
				Mean Time			A_N	A_E		
44	3	I_d	eP	0	08 12					
			eL		08 26					
			M_N		08 28	1	8			
			F		11					
45	3	I_d	iL	17	52 22					
			F		54					
46	6	I	e	11	41 00					
			F		49					
47	7	I_v	eP	4	44 00					Northern part of Agusan Valley.
			eS		45 26					
			L		46 51					
			M_N		47 59	8	4			
			F	5	12					
48	8	I_v	eP	1	08 28	1-2				Northern part of Agusan Valley.
			eS		10 05	3-4				
			eL		11 42	4-5				
			M_N		12 32	9-10	11			
			F		41					
49	8	I	eP	8	20 30					
			iL		21 50					
			M_N		21 54	3-4	78			
			F		42					
50	8	I_d	eP	15	41 40					
			iL		41 57					
			M_E		42 28	3	15			
			F		47					
51	8	I_v	eP	23	20 44					Northern part of Agusan Valley.
			F		37					
52	10	I_d	eP	17	51 13					
			eL		51 35					
			M_N		51 40	3	7			
			F		54					
53	11	I	e	10	07 12					
			F		34					

No. 7.

From 11th to 21st March, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1000 Kg.)

	T_0	ϵ
A_N	7	3.6
A_E	7	3

No.	Date	Character	Phase	Greenwich		Period	Amplitude		Δ	Remarks
				Mean	Time		A_N	A_E		
54	11	I_v	eP	15	34 33	9	46	29		Northern part of Agusan Valley.
			eS		36 07					
			iL		37 31					
			M_N		38 33					
			M_E		38 47					
55	14	I_v	F	16	27					Northern part of Agusan Valley.
			eP	6	26 26					
			eL		28 52					
			M_N		30 08					
56	14	I	F	7	44					
			eP	7	46 00					
57	16	I_d	F	8	20	1-2	15	30		
			eP	8	45 55					
			eL		46 25					
			M_N		46 39					
			M_E		46 39					
58	16	I_v	F	51						Northern part of Agusan Valley.
			e	13						
59	17	I_v	F	14	00	5-6	25			Northern part of Agusan Valley.
			eP	15	25 08					
			eS		26 37					
			iL		27 48					
			M_N		29 00					
60	19	I_d	F	16	25	7-8				
			eP	11	11 00					
			L		11 13					
			M_E		11 16					
61	19	I_v	F	14		3				Northern part of Agusan Valley.
			e	14	02 \pm					
62	19	I_v	F	14						Northern part of Agusan Valley.
			e	15	51 \pm					
63	21	I	F	16	02					
			e	15	59 \pm					
			F	16	08					

No. 8a.

From 22nd to 31st March, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

$\phi = 14^{\circ} 34' 41''$ N.

$\lambda = 120^{\circ} 58' 33''$ E.

$h = 2.40$ m.

Alluvium.

Instrument: Wiechert's static pendulum (1000 Kg.)

	T_0	ϵ
A_N	7	3.6
A_E	7	3

No.	Date	Character	Phase	Greenwich		Period	Amplitude		Δ	Remarks.
				Mean	Time		A_N	A_E		
64	22	I_v	eP	4	30 38	4-5	54	36		Northern part of Agusan Valley.
			eS		32 23					
			eL		34 18					
			M_N		34 46					
			M_F		35 51					
65	24	I	F	5	45					
			e	12	23 42					
66	25	I_v	eP	4	59 00	5	22			
			eL	5	06 44					
			M_N		06 55					
			F		43					
67	25	I_v	eP	14	02 40	11	17			Northern part of Agusan Valley.
			eS		04 17					
			eL		05 46					
			M_N		06 36					
68	26	I	e	6	20 22					
			F		42					
69	27	II_v	eP	12	23 09	4	245	467		Central Luzon.
			iL		23 28					
			M_E		25 00					
			M_N		25 05					
70	27	I_d	e	21	40 00					
			F		42					
71	29	I_d	e	2	55 54					
			F	3	01					
72	30	II_v	eP	7	39 00	3	322	478		Near the northern coast of Samar.
			eL		39 55					
			M_E		40 23					
			M_N		41 49					
73	31	I	F	8	33					
			e	10	14 39					
			F		21					

No. 88.

March, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

Macroseisms not registered by the seismographs.

Greenwich mean time.

- March 1st. At 3^h 53^m earthquake, intensity III at Dapitan (NW of Mindanao).
- " 3rd At 5^h 57^m Eque., III at Butuan (N of Mindanao).
- " 7th At 4^h 44^m 00^s Eque., III, northern part of Agusan Valley. Repeated at 5^h 04^m and 5^h 14^m.
- " 8th At 1^h 08^m 28^s Eque., IV, northern part of Agusan Valley.
- " 8th At 23^h 20^m 44^s Eque., IV, northern part of Agusan Valley.
- " 10th At 17^h 35^m Eque., III at Butuan (N of Mindanao).
- " 11th At 15^h 34^m 35^s Eque., IV, northern part of Agusan Valley.
- " 12th At 2^h 11^m Eque., II at Tacloban (NE of Leyte).
- " 12th At 6^h 10^m Eque., III at Butuan (N of Mindanao).
- " 12th At 6^h 25^m Eque., III at Borongan (E of Samar).
- " 14th At 6^h 26^m 26^s Eque., IV, northern part of Agusan Valley.
- " 16th At 13^h 06^m Eque., III-IV, northern part of Agusan Valley.
- " 17th At 15^h 25^m 03^s Eque., IV, northern part of Agusan Valley. Repeated at 15^h 28^m and 15^h 32^m.
- " 18th At 2^h 10^m Eque., II at Butuan (N of Mindanao).
- " 19th At 14^h 02^m Eque., IV, northern part of Agusan Valley. Repeated at 15^h 51^m.
- " 20th At 17^h 20^m 19^s Eque., II at Apurki (NE of Luzon).
- " 20th At 19^h 50^m Eque., II at Tacloban (NE of Leyte).
- " 22nd At 4^h 30^m 38^s Eque., IV, northern part of Agusan Valley.
- " 25th At 14^h 32^m 40^s Eque., IV, northern part of Agusan Valley.
- " 26th At 13^h 05^m Eque., III at Cimonan (SE of Luzon).
- " 27th At 12^h 23^m 09^s Eque., II, Central Luzon.
- " 30th At 7^h 39^m 00^s Eque., V near the northern coast of Samar.
- " 30th At 20^h 41^m Eque., III at Butuan (N of Mindanao).

A. Sadava A.

No. 9.

From 1st to 15th April, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

$\phi = 14^{\circ} 34' 41''$ N.

$\lambda = 120^{\circ} 58' 33''$ E.

$h = 2.40$ m.

Alluvium.

Instrument: Wiechert's static pendulum (1000 Kg.)

	T_0	ϵ
A_N	7	3.6
A_E	7	3

No.	Date	Character	Phase	Greenwich Mean Time	Period	Amplitude		Δ	Remarks.
						A_N	A_E		
74	1	I_d	eP iL M _E F	16 45 06 45 13 45 18 48	3		12		
75	3	I_v	e F	11 39 50 12 17					Northern part of Agusan Valley.
76	3	I_v	e F	21 17 51 47					Northern part of Agusan Valley
77	4	I_d	eP L F	2 45 59 46 04 48					
78	4	I	e F	10 40 00 11 11					
79	6	I_d	eP i L F	5 58 02 58 15 58 24 6 02					
80	6	I_d	eP eL M _N F	14 28 20 28 42 29 00 33	3	19			
81	7	I_v	eP L M _E F	21 11 48 12 43 13 16 19	3		23		Eqke., III at Aparri (NE of Luzon).
82	13	I_d	eP iL M _E F	7 38 03 38 18 38 19 41	2-3		34		
83	14	I_v	eP F	12 29 28 41					Eqke., IV at Surigao (NE of Mindanao).
84	14	I	e F	22 40 23 23 07					

No. 10.

from 16th to 28th April, 1912.

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 Kg.)

	T_0	ϵ
A_N	7	3.6
A_E	7	3

No.	Date	Character	Phase	Greenwich		Period	Amplitude		Δ	Remarks.
				Mean Time			A_N μ	A_E μ		
85	16	II_v	eP L M_E M_N F	2 08 07 08 34 08 57 08 46 30		4 4		256	Eqke., III near the Romblon Island.	
86	16	I_d	e F	8 57 33 9 02						
87	20	I	e F	1 19 25 34						
88	20	I	e M_N F	1 38 33 48 07 2 43		12	4			
89	23	I_r	eP eL M_N M_E F	21 49 48 58 00 22 01 28 01 45 35		13-14 13-14	4 4			
90	24	I_d	eP iL M_N F	21 40 50 41 10 41 12 44		2-3	20			
91	26	I_d	eP eL M_N F	4 13 38 13 50 14 58 20		4	10			
92	26	I_v	eP iL M_N F	6 16 22 16 55 17 28 25		3-4	51		Eqke., III at Uigan (NW of Luzon).	
93	27	I	eP F	3 45 36 4 05						
94	28	I_d	eP L F	2 46 40 46 50 49						

No. 11.

From 29th to 30th, April.

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Alluvium.

Instrument: Wiechert's static pendulum (1,000 Kg.)

	T.	ϵ
A_N	7	3.6
A_E	7	3

No.	Date	Charact.	Phase	Greenwich Mean Time	Period	Amplitude		Δ	Remarks.
						A_N	A_E		
95	29	I	e F	9 35 9 50					
96	30	I_d	e F	0 17 00 20					
97	30	I	e F	7 34 51 8 00					

Macroseisms not registered by the seismographs.

 April 3rd at 11^h 39^m 50^s Earthquake, III, northern part of Agusan Valley. Repeated at 21^h 17^m 51^s.

 " 4th at 23^h Earthquake, II at Butuan (N of Mindanao).

 " 5th at 15^h 03^m Earthquake, III at Aparri (NE of Luzon).

 " 5th at 20^h 12^m Earthquake, III at Aparri (NE of Luzon).

 " 7th at 7^h 10^m Earthquake, III at Butuan (N of Mindanao).

 " 7th at 21^h 11^m 48^s Earthquake, III at Aparri (NE of Luzon).

 " 8th at 20^h 32^m Earthquake, III-IV, northern part of Agusan Valley.

 " 10th at 3^h 01^m 40^s Earthquake, II at Butuan (N of Mindanao).

 " 14th at 12^h 29^m 28^s Earthquake, IV, northern part of Agusan Valley.

 " 14th at 21^h 08^m Earthquake, II at Butuan (N of Mindanao).

 " 16th at 2^h 08^m 07^s Earthquake, III near the Romblon Island.

 " 16th at 14^h 10^m Earthquake, II at Calbayog (W of Samar).

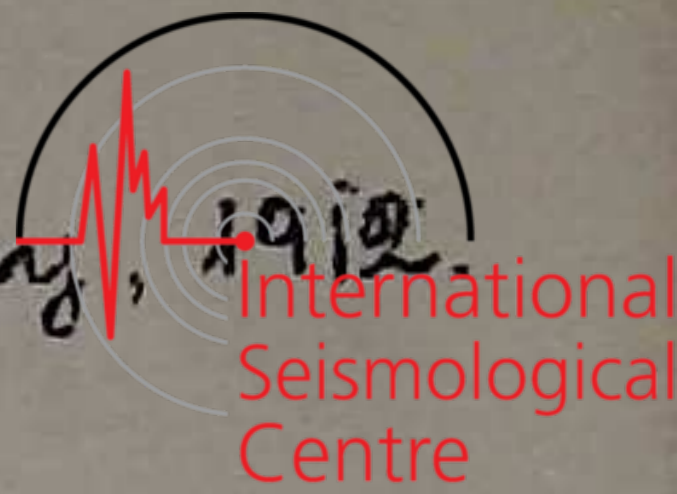
 " 18th at 20^h 10^m Earthquake, II at Surigao (NE of Mindanao).

 " 26th at 6^h 16^m 22^s Earthquake, III at Vigan (NW of Luzon).

 " 30th at 17^h 20^m Earthquake, III at Sarangani (S of Mindanao?).

No. 12.

From 1st to 10th of May, 1912



Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1,000 Kg.)

	Γ_0	ϵ
A_N	7	3.6
A_E	7	3

No.	Date	Character	Phase	Greenwich		Period	Amplitude		Δ	Remarks.
				Mean Time			A_N	A_E		
98	1	I	eP	12	43 07	11-12	12			
			L	48 00						
			M _N	50 40						
			F	13 23						
99	2	I _d	eP	6	44 37	1-2	64			
			iL	44 57						
			M _N	45 02						
			F	49						
100	3	I _r	eP	19	06 50	14-15	6			
			eL	11 00						
			M _N	12 02						
			M _E	12 09						
			F	37						
101	4	I _r	e	14	31 45					Egke., III at Baguio (W of Luzon).
			eL	32 06						
			F	43						
102	6	I _u	P	19	17 11	15-16	4			
			S	29 37						
			L	41 48						
			M _E	55 14						
			M _N	20 04 36						
103	8	I _d	eP	7	01 51	2-3				
			L	02 16						
			M _E	02 26						
			F	05						
104	10	I _r	eP	10	05 54	5-6	10			Northern part of Agusan Valley
			L	07 46						
			M _N	09 04						
			F	54						

No. 13.

From 11th to 23rd of May, 1919.



Manila, P. I.

Seismological Bulletin of the Observatory.

$\phi = 14^{\circ} 34' 41''$ N.

$\lambda = 120^{\circ} 58' 33''$ E.

$h = 2.40$ m.

Alluvium.

Instrument: Wiechert's static pendulum (1,000 Kg.)

	T.	E
A_N	7	3.6
A_Z	7	3

No.	Date	Character	Phase	Greenwich Mean Time	Period	Amplitude		Δ	Remarks.
						A_N	A_Z		
105		I	e	17 36 10					Taken from the Horizontal Pendulums. Time-marks missing on Wiechert seismograph.
			F	18 25					
106	11	I	e	20 27 20					
			F	58					
107	13	I	e	4 49 47					
			F	5 05					
108	15	I	e	0 15 35					
			F	39					
109	16	I_a	iP	0 10 09					
			F	12					
110	16	I	eP	11 52 06					Cuyo Island.
			L	52 40					
			M _N	52 48	2-3	6			
			F	12 01					
111	20	I	eP	7 58 54					
			F	8 20					
112	21	I_T	eP	8 34 27					
			eS	38 55					
			eL	43 22					
			M _E	44 52	13-14		13		
			M _N	45 09	12-13	10			
			F	9 26					
113	23	II_u	eP	2 29 30	2-3				Maldive Islands.
			iS	36 30	6-7				
			iL	43 34	10-11				
			M _E	45 12	10-11		138		
			M _N	46 13	11-12	87			
			F	4 22					

No. 14 a.

From 23rd to 31st of May, 1912

Manila, P. I.

Seismological Bulletin of the Observatory.

$\phi = 14^{\circ} 34' 41'' N.$

$\lambda = 120^{\circ} 58' 33'' E.$

$h = 2.40 m.$

Alluvium.

Instrument: Wiechert's static pendulum (1000 Kg.)

	T_0	ϵ
A_N	7.	3.6
A_E	7	3

No.	Date	Character	Phase	Greenwich		Period	Amplitude		Δ	Remarks.
				Mean	Time		A_N	A_E		
114	23	I_r	eP eL M_N F	5	42 54 43 14 44 17 52	2-3	42		Western Luzon.	
115	25	I_r	eP iL M_N F	15	49 26 51 53 52 31 16 22	3	25			
116	25	I_d	eP L F	20	39 13 39 27 41					
117	28	I_r	e F	6	59 06 7 23					
118	28	I_r	e F	12	18 01 ?				As the Wiechert seismo-graph was not working regularly these data have been taken from the Horizontal Pendulums.	
119	28	I_r	e F	12	50 ? 13 53					
120	28	II_d	eP iL M_N F	16	01 41 01 57 01 59 05	2	170			

M. Saderra

No. 146.

May, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

Macroseisms not registered by the seismographs.
Greenwich mean time.

- May 4th, 14^h 31^m 45^s earthquake, III at Baguio (W of Luzon).
 " 6th, 10^h 40^m Eqke., II at Santo Domingo (Batanes Islands).
 " 7th, 15^h 04^m Eqke., III, near south coast of Samar.
 " 10th, 10^h 05^m 54^s Eqke., VII-VIII, northern part of Agusan Valley.
 " 10th, 17^h 53^m 27^s Eqke., II at Surigao (NE of Mindanao).
 " 12th, 13^h 45^m Eqke., IV, at Santo Domingo (Batanes Islands).
 " 15th, 23^h 00^m Eqke., III at Santo Domingo (Batanes Islands).
 " 16th, 7^h 30^m Eqke., III at Sarangani (S of Mindanao).
 " 16th, 11^h 52^m 06^s Eqke., III at Cuyo Island.
 " 17th, 6^h 05^m Eqke., III at Sarangani (S of Mindanao).
 " 23rd, 5^h 42^m 54^s Eqke., III at Baguio (W of Luzon).
 " 24th, 7^h 25^m 50^s Eqke., II at Surigao (NE of Mindanao).
 " 31st, 13^h 19^m Eqke., II at Surigao (NE of Mindanao).

M. Saderra

No. 15.

From 1st to 8th of June, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

$\phi = 14^{\circ} 34' 41''$ N.

$\lambda = 120^{\circ} 58' 33''$ E.

$h = 2.40$ m.

Alluvium.

Instrument: Wiechert's static pendulum (1000 Km).

	T.	ξ
A_N	7	3.6
A_E	7	3

No.	Date	Character	Phase	Greenwich mean time	Period	Amplitude		Δ	Remarks.
						A_N	A_E		
121	2	I_r	eP	12 03 51	9-10	16			
			eS	06 22					
			eL	08 56					
			M_N	09 18					
			F	41					
122	4	I_r	eP	5 21 49	3	42			
			L	22 19					
			M_N	23 22					
			F	38 00					
123	4	I_d	eP	23 08 00	3	13			
			M_N	09 32					
			F	18					
124	5	I_r	eP	11 18 09	5		48		
			iL	22 00					
			M_F	22 45					
			F	12 10					
125	7	I_r	e	3 43 01					
			F	4 23					
126	7	I_r	e	10 07 ?					
			F	11 17					
127	7	I_r	e	18 47 35					
			F	19 34					
128	8	I_r	e	4 47 52					
			F	5 20					
129	8	I_u	e	7 48 00					
			F	9 57					
130	8	I_r	e	13 21 40					
			F	57					

As the Wiechert seismograph was not working regularly these data have been taken from the Horizontal Pendulums.

No. 16.

From 9th to 15th of June, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

 $\phi = 14^{\circ} 34' 41'' \text{N.}$
 $\lambda = 120^{\circ} 58' 53'' \text{E}$
 $h = 2.40 \text{m.}$

Alluvium.

Instrument: Wiechert's static pendulum (1000 Kg.)

	I.	E
A_N	7	3.6
A_E	7	3

No.	Date	Charact.	Phase	Greenwich		Period	Amplitude		Δ	Remarks.
				Mean	Time		A_N	A_E		
131	10	I_d	eP iL F	0	10 10 10 22 15					
132	10	I_d	eP L F	1	06 13 06 24 09					
133	10	I_r	eP F	16	17 59 18 01					
134	12	I_v	eP iL M_F F	0	34 12 34 34 34 37 43	1-2	14.4		Western Luzon	
135	12	I_r	eP F	13	03 08 38				As the Wiechert seismograph was not working regularly, these data have been taken from the Horizontal Pendulum, Southeastern Luzon.	
136	12	I_r	eP F	14	45 33 15 48					
137	13	I_v	eP eL F	20	19 54 20 20 24					
138	14	I_r	eP L M_F F	15	59 47 16 03 44 04 15 22	6	33			
139	15	I_r	eP L M_N T	0	11 19 16 57 18 55 48	7-8	29			

No. 17.

From 15th to 24th of June, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

$\phi = 14^{\circ} 34' 41''$ N. $\lambda = 120^{\circ} 53' 33''$ E. $h = 2.40$ m. Alhambra

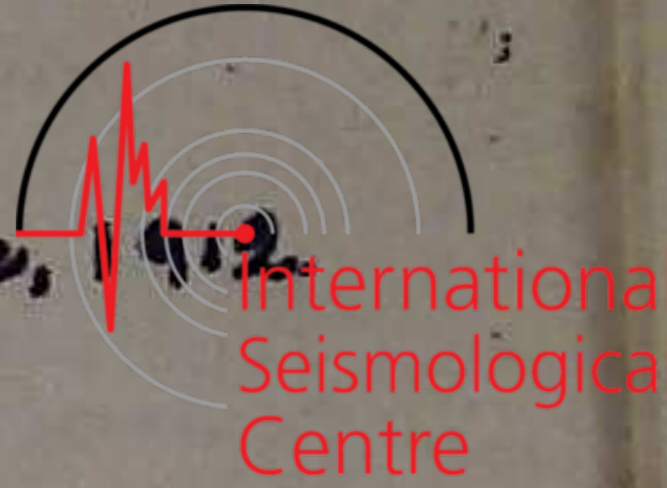
Instrument: Wiechert's static pendulum (1000 Kg.)

	T.	E
A_N	7	3.6
A_E	7	3

No.	Date	Character	Phase	Greenwich		Period	Amplitude		Δ	Remarks
				Mean time			A_N	A_E		
140	15	I	eP L M _N F	2 16 09 18 17 18 59 27		5-6	17			
141	15	I _d	eP F	15 45 35 48						
142	15	I	eP L M _E F	16 25 56 26 19 26 38 28		3-4	23			
143	17	I _d	e F	5 40 09 43						
144	17	I _r	e F	11 27 00 58						
145	18	II _v	eP eL M _N M _E F	1 32 43 33 49 34 12 34 57 49		6-7 5-6	81 129		Northern Luzon.	
146	18	I _r	eP L M _N F	12 07 00 17 19 20 49 13 07		12-13	5			
147	20	I _u	e F	0 16 40 46					Wiechert seismograph was re- pairing, this signal has been taken from the horizontal pendulum.	
148	24	I	eP eL M _N F	15 09 59 10 18 10 27 11		3	20			

No. 18 a.

From 2:00 to 3:00 of June, 1912.



Manila, P. I.

Seismological Bulletin of the Observatory.

$\phi = 14^{\circ} 34' 41'' N.$

$\lambda = 120^{\circ} 58' 33'' E.$

$h = 2.40 m.$

Alluvium.

Instrument: Wiechert's static pendulum (1000 Kg)

	T.	E.
A_N	7	3.6
A_E	7	3.

No.	Date	Charact.	Phase	Greenwich Mean Time	Period	Amplitude		Δ	Remarks.
						A_N	A_E		
149	26	I	cP L M _E F	10 29 33 31 03 31 07 50	6-7		15		
150	26	II _v	cP iL M _N M _E F	14 27 29 28 19 29 17 30 02 15 09	7 4-5	424	948	Eqke. II at Baguio (W of Luzon).	
151	27	II _v	cP iL M _N M _E F	1 05 54 06 50 07 30 08 22 28	7 7	246	417	Northern Luzon.	
152	27	I	cP cS L M _E F	13 43 00 43 44 44 27 44 55 56	5		20		
153	27	I	cP cS L M _E F	18 49 30 50 02 50 55 51 20 58	5-6		26		
154	29	I _v	c F	2 41 20 3 05					
155	29	I _v	c F	8 10 45 41					

M. Luderer H.

No. 186.

June, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

Macroseisms not registered by the seismographs.

Greenwich mean time.

- June 3rd, 17^h 18^m. Earthquake, III at Aparri (NE of Luzon)
 " 4th, 13^h 10^m. Earthquake, III at Laoag (NW of Luzon).
 " 10th, 20^h 32^m 17^s. Earthquake, III at Aparri (NE of Luzon).
 " 12th, 7^h 17^m 24^s. Earthquake, II at Baguio (W of Luzon).
 " 12th, 11^h 52^m. Earthquake, III at Legaspi (SE of Luzon)
 " 14th, 17^h 45^m. Earthquake, III at Capiz (N of Panay).
 " 18th, 9^h 30^m. Earthquake, II at Cotabato (SW of Mindanao).
 " 28th, 14^h 20^m. Earthquake, II at Nueva Caceres (SE of Luzon).
 " 29th, 14^h 03^m. Earthquake, II at Nueva Caceres (SE of Luzon).
 " 29th, 17^h 05^m. Earthquake, II at Tacloban (NE of Leyte).
 " 29th, 19^h 02^m. Earthquake, III at Cotabato (SW of Mindanao).
 " 30th, 17^h 12^m. Earthquake, V, Leyte Island.

M. Sadava H.

No. 19.

From 1st. to 12th of July, 1912.



Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1,000 Kg.)

	T_c	ϵ
A_N	7	3.6
A_E	7	3

No.	Date	Character	Phase	Greenwich Mean Time	Period	Amplitude		Δ	Remarks.
						A_N	A_E		
156	3	I_r	e F	10 55 ? 11 16					
157	4	I_v	e F	5 46 06 50					Baguio (W of Luzon).
158	4	II_v	iP L M_E F	12 06 56 07 15 07 17 49	1-2		8.33		Western Luzon.
159	6	I_r	e F	16 22 25 44					From the Horizontal Pendulum.
160	7	II_m	eP eS eL M_N F	8 09 34 19 09 28 54 51 21 10 20	12	43			
161	8	II_v	eP L M_E F	16 39 17 40 53 41 37 17 06	3-4		989		Northern Luzon.
162	9	I_r	e F	8 35 12 57					
163	10	I_d	eP L F	16 41 23 41 36 44					
164	10	I_r	e F	18 25 11 42					
165	11	I_r	eP eL M_E F	17 00 59 03 11 04 52 19					From the Horizontal Pendulum. Wiechert's seismograph dismounted.

No. 20.

From 13th to 20th of July, 1902

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1000 Kg.).

	T_0	ϵ
A_N	7	3.6
A_E	7	3

No.	Date	Charact.	Phase	Greenwich Mean Time	Period	Amplitude		Δ	Remarks.
						A_N μ	A_E μ		
166	13	I_r	e I	14 39 48 52					
167	17	I_r	e F	12 30 17 13 07					
168	17	II_v	eP L	23 02 55 03 13					Calapan (N of Mindoro). Maximum and cut left in slipping place the pens.
169	17	I	eP L M_E F	23 22 30 22 47 22 53 26	3		21		
170	17	I	eP L M_E F	23 43 35 43 49 43 51 47	2		25		
171	18	I	eP L M_E F	0 05 07 05 25 05 29 09	2-3		57		
172	18	I	eP L M_E F	0 20 56 21 14 21 18 24	2-3		39		
173	18	I	eP L F	2 33 20 33 37 36					
174	19	I_d	eP F	1 04 08 07					
175	20	I	eP L F	22 15 55 16 50 20					

No. 21 a.

From 21st to 31st of July, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1600 Kg.)

	T_0	ϵ
A_N	7	3.6
A_E	7	3

No.	Date	Character	Phase	Greenwich		Period	Amplitude		Δ	Remarks.
				Mean Time			A_N	A_E		
176	24	II_r	eP L M_N F	12 10 42 18 11 21 56 12 54		11	13			
177	24	I_d	eP F	14 12 45 15						
178	24	I_r	eP F	23 25 ± 48						
179	25-26	I_r	eP iS L M_N F	23 14 52 19 09 23 27 25 12 0 17		10-11	17			
180	26	I_r	eP L M_N F	2 34 00 40 11 41 48 3 51		12	5			
181	26	I_r	e F	7 47 10 8 31						
182	29	I	eP L F	3 19 48 20 03 22						

M. Padua N.

No. 216.

July, 1912.

Manila, P. I.
Seismological Bulletin of the Observatory.
Macroseisms not registered by the seismographs.
Greenwich mean time.

- July 2nd, 8^h 10^m. Earthquake, II at Laoag (NW of Luzon).
 " 4th, 5^h 38^m 39^s. Eake., II at Baguio (W of Luzon).
 " 6th, 16^h 37^m. Eake., III at Butuan (N of Mindanao).
 " 7th, 10^h 02^m 30^s. Eake., III at Butuan (N. of Mindanao).
 " 7th, 15^h 55^m. Eake., II at Nueva Caceres (SE of Luzon).
 " 12th, 2^h 00^m. Eake., II in Romblon Island.
 " 15th, 16^h 24^m. Eake., II at Nueva Caceres (SE of Luzon).
 " 16th, 8^h 07^m. Eake., II at Baguio (W of Luzon).
 " 17th, 16^h 12^m. Eake., II at Tacloban (NE of Leyte).
 " 20th, 22^h 07^m. Eake., II at Legaspi (SE of Luzon).
 " 20th, 22^h 26^m. Eake., III at Baguio (W of Luzon).
 " 22nd, 5^h 19^m 30^s. Eake., III at Butuan (N of Mindanao).
 " 22nd, 16^h 40^m. Eake., III at Butuan (N of Mindanao).

M. Sadava A.

No. 22.

August 1st to 15th, 1912.

Manila, P.I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1000 Kg.)

	T_p	ϵ
A_N	7	3.6
A_E	7	3

No.	Date	Character	Phase	Greenwich Mean Time	Period	Amplitudes.		Δ	Remarks.
						A_N	A_E		
183	2	I_d	eP L F	4 47 07 47 18 50					
184	3	I_r	eF F	9 16 \pm 35					
185	4	I_r	eF F	19 05 \pm 31					
186	6	I_r	eP eS L M_N F	13 33 14 37 50 42 13 44 32 14 32	11-12	23			
187	6	I_d	eP F	19 04 00 07					
188	6	I_r	eP eS L M_N F	21 20 24 24 29 27 52 28 28 22 12	8-9	13			
189	9	I_u	eP	1 42 01					This commencement has been taken from the Horiz. Seis. Gallipoli (Turkey in Europe).
189	9	I_u	eP eS L M_N F	1 41 05 52 21 2 02 40 25 22 3 07	19-20	21			
190	15	I_v	eP F	13 43 15 14 03					
191	15	I_d	eP L M_N F	14 20 00 20 16 20 32 34	2-3	151			

No. 23.

August 15th to 18th, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1000 Kg.)

	T.	E
A_{N}	7	3.6
A_{E}	1	3

No.	Date	Character	Phase	Greenwich		Period	Amplitude		Δ	Remarks.
				Mean Time			A_{N}	A_{E}		
192	15	I _r	eP F	17	59 00 31					
193	16	I	eP L M _N F	2	24 36 24 52 25 12 32	1-2	152			
194	16	I _A	e F	3	56 33 59					
195	17	II _r	eP i iS i L M _N F	19	14 56 18 00 19 12 21 32 23 16 24 47 26 40	4-5 6-7 6-7 10-11	370		Eastern Mindanao.	
196	17	I _r	e F	21	21 38 33					
197	18	I _r	e F	0	35 54 57					
198	18	I _r	eP F	2	16 00 37					
199	18	I _r	eP eS L M _E F	7	44 00 46 15 47 50 50 16 8 18	7-8	17			
200	18	I _r	eP L M _E F	13	24 14 27 25 28 18 43					

No. 24.

August 18th to 23rd, 1918.

Manila, P. I.

Seismological Bulletin of the Observatory.

$\phi = 14^{\circ} 34' 41''$ N. $\lambda = 120^{\circ} 58' 35''$ E. $h = 2.40$ m. Alluvium.

Instrument: Wiechert's static pendulum (4000 Kg.)

	I_0	ϵ
A_N	7	3.6
A_E	7	3

No.	Date	Character	Phase	Greenwich		Period	Amplitude		Δ	Remarks.
				Mean Time	Period		A_N	A_E		
201	18	I_r	eP F	15 48 58 16 02						
202	18	I_r	eP S L M_F F	18 27 37 30 08 33 36 35 22 58	11-12		5			
203	18	I_r	eP I F	20 20 45 22 29 43						
204	18	I_r	eP S L M_E F	21 32 20 34 18 36 25 39 48 22 08	12-13		20			
205	19	I_r	eP F	16 31 00 54						
206	21	I_r	e F	4 30 46 52					From the Horizontal Pendulums.	
207	21	I_r	eP L M_N F	17 29 48 32 27 32 47 52	5-6	72				
208	23	I_r	e F	7 46 30 8 09					From the Horizontal Pendulums.	
209	23	I_r	e M_E F	14 05 ? 18 19 35	11-12		5			
210	23	I_r	eP M_E F	21 50 18 57 11 22 13	5-6		7			

No. 25.

August 24th to 31st, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1000 Kg).

	I_0	δ
A_N	5.7	3.6
A_E	6.1	3

No.	Date	Charact.	Phase	Greenwich mean time.	Period	Amplitude		Δ	Remarks.
						A_N	A_E		
211	26	I _d	cP	18 58 48					
			I	59 17					
			M _N	59 23	1-2	34			
			M _E	59 23	1-2		42		
			F	19 03					
212	27	I _r	c	0 13 11					
			F	43					
213	29	II _v	cP	13 13 52					Central Luzon.
			I	14 09					
			M _N	15 22	3-4	399			
			M _E	15 27	4-5		282		
			F	23					
214	29	I _v	cP	19 42 16				Baguio (W of Luzon).	
			F	45					
215	30	II _v	cP	18 11 40					East of southeastern of Luzon
			I	12 38					
			M _E	12 50	5-6		556		
			M _N	13 11	6-7	388			
			F	37					
216	30	I _v	cP	19 31 02					
			I	31 46					
			M _N	32 20	3-4	26			
			F	38					
217	30	I _v	cP	23 43 27					Baguio (W of Luzon).
			I	44 04					
			M _N	44 44	3	40			
			F	52					
			F						

Macroscisms not registered by the seismographs.
Greenwich mean time.

August 17th, 20^h 30^m Earthquake, II at Davao (SE of Mindanao).
" 21st, 4^h 18^m do. III at Cotabato (SW of Mindanao).

M. Lueders M.

No. 26.

September 1st to 8th, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1000 Kg.)

	T_0	ϵ
A_N	5.7	3.6
A_E	6.1	3

No.	Date	Character	Phase	Greenwich mean Time	Period	Amplitude.		Δ	Remarks.
						A_N	A_E		
218	1	I_r	eP	4 16 48	7	59	99		
			eS	19 52					
			L	22 07					
			M_N	22 22					
			M_E	23 21					
			F	29					
219	1	II_r	eP	13 22 23	5-6		386		Earthquake. Origin near the southern coast of Luzon.
			L	22 44					
			M_E	24 12					
			F	39					
220	2	I_d	eP	11 17 00					
			F	20					
221	2	I	eP	18 59 26					
			L	19 00 07					
			F	03					
222	2	I_d	eP	20 34 10					
			L	34 27					
			F	37					
223	4	II_r	eP	0 27 48					Earthquake. Origin near the southern coast of Luzon.
			L	28 00					
			F	49					
224	5	I_d	eP	8 11 58	1-2	9			
			L	12 06					
			M_N	12 19					
			F	13					
225	8	I_d	eP	5 06 13	1	14			
			L	06 31					
			M_N	06 49					
			F	09					

No. 27.

September 8th to 19th, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

 $\phi = 14^{\circ}34'41''N.$ $\lambda = 120^{\circ}55'33''E.$ $h = 2.40m.$ (Alluvium.)

Instrument: Wiechert's static pendulum (1.000 Kg.)

	T.	E
A _N	5.7	3.6
A _E	6.1	3

No.	Date	Charact.	Phase	Greenwich		Period	Amplitude		Δ	Remarks.
				Mean Time			A _N "	A _E "		
226	8	I _d	eP L M _N F	6 08 02 08 16 08 36 11		1	17			
227	9	I	eP L M _N M _E F	7 43 47 44 10 44 14 44 14 50		2-3 2-3	37 28			
228	11	I _r	eP eS L M _E M _N F	0 53 19 58 26 1 03 58 06 46 07 43 30		13 13-14	20 5			
229	11	I	e F	19 48 09 57						
230	12	I	eP L M _N F	8 15 05 15 29 15 54 20		2-3	14			
231	12	I	e F	12 04 23 13						
232	16	I _d	eP F	22 26 46 29						
233	17	I _d	eP L F	14 20 00 20 16 22						
234	19	I _d	eP L F	23 49 20 49 37 54						

No 28.

September 21st to 30th, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Alluvium.

Instrument: Wiechert's static pendulum (1000 Kg.)

	T.	E
A_N	5.7	3.6
A_E	6.1	3

No.	Date	Character	Phase	Greenwich mean time.		Period.	Amplitude		Δ	Remarks.
							A_N	A_E		
235	22	I _d	i F	0 51 49 53						
236	22	II _d	eP L M _N M _E F	3 29 42 29 56 30 19 30 19 36	2-3 4	69	93			
237	29	III _r	eP S _E S _N L _N L _E M _E M _N F	20 55 22 21 02 36 02 57 07 40 07 53 16 26 19 48 22 56	4-5 5-6 5-6 6-7 6-7 7-8 7-8	456	555			

Macroseisms not registered by the seismographs.

Greenwich mean time.

- September 1st, 15^h 00^m aftershock, II at Atimonan (SE of Luzon).
 " 2nd, 1^h 10^m earthquake, II at Nueva Caceres (SE of Luzon).
 " 5th, 15^h 10^m earthquake, III, in the northern part of Leyte.
 " 13th, 20^h 47^m earthquake, III at Tacloban (NE of Leyte).
 " 16th, 17^h 20^m earthquake, III at Butuan (N of Mindanao).
 " 23rd, 1^h 30^m 30^s earthquake, II at Surigao (NE of Mindanao).

M. Sadava.

No. 29.

 October 1st to 18th, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1,000 Kg.)

	T_0	ϵ	$\frac{T}{T_0^2}$
A_N :	8.2	3.30	0.023
A_E :	7.9	3.12	0.034

No.	Date	Charact.	Phase	Greenwich mean Time		Period	Amplitude		Δ	Remarks.
							A_N "	A_E "		
238	3	I_v	e M_E F	16 15 00 18 36 52	15		11		Cotabato (SW of Mindanao).	
239	4	II_v	eP I	12 53 05 53 22					Origin near Baler Bay. Maximum and end lost by the form of shock.	
240	5	I_d	iP F	22 20 57 23						
241	6	I	eP i L M_F F	0 50 21 50 40 50 43 50 51 1 03	1		216			
242	9	I_r	e F	16 36 00 17 01						
243	11	I_d	eP F	2 20 32 23						
244	12	I_r	e F	15 31 16 20						
245	16	I_d	eP L F	22 26 20 26 40 29						
246	17	I_r	e F	9 56 10 30						
247	18	I_d	eP L M_N F	4 01 52 02 04 02 05 06	1-2	170				

No. 30.

October 18th to 27th, 1912.

Manila, P.I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1,000 Kg.)

	T_0	ϵ	$\frac{r}{T_0^2}$
A_N	8.2	3.30	0.023
A_E	7.9	3.12	0.034

No.	Date	Charact.	Phase	Greenwich		Period.	Amplitude		Δ	Remarks.
				Mean Time			A_N	A_E		
248	18	I_r	eP	12	05	51	58	34		
			eS	12	14					
			L	17	48					
			M_E	20	21	12-13				
			M_N	24	28	10-11				
		F	13	17						
249	18	I_v	eP	12	27	46				Calapan (NE of Mindoro).
			L	28	04					
			F	34						
250	24	I_d	eP	17	58	42	1	71		
			L	58	57					
			M_N	59	08					
			F	18	03					
251	26	I_r	eP	9	08	58	8-9	559	184	End overtaken by following earthquake.
			S	08	30					
			L	10	58					
			M_N	11	40					
			M_E	15	02	9-10				
252	26	I_v	e	9	16	30	6-7	274		Lavaag (NW of Luzon).
			M_N	16	54					
			F	10	02					
253	27	I_d	eP	11	09	52	3	22		
			L	10	07					
			M_N	10	17					
			F	13						
254	27	I	eP	16	40	21	5	304	367	
			i	42	09					
			L	42	24					
			M_N	42	41					
			M_E	42	53	5-6				
			F	17	11					

No. 31.

October 28th to 31st, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instruments: Wiechert's static pendulum (1,000 kg.)

	T_0	ϵ	$\frac{r}{T_0^2}$
A_N	8.2	3.30	0.023
A_E	7.9	3.12	0.034

No.	Date	Character	Phase	Greenwich Mean time	Period	Amplitude		Δ	Remarks.
						A_N r	A_E r		
255	29	I_r	e F	6 25 7 04					
256	29	I_r	e F	19 08 19 30					
257	31	II_r	eP iS L M_E M_N F	17 27 50 31 18 34 18 37 27 37 29 19 20					
					9 9	310	313		

Macroseisms not registered by the seismographs.
Greenwich mean time.

- October 3rd, 16^h 48^m - aftershock II at Cotabato (SW of Mindanao).
 " 7th, 14^h short sharp quake at Guam (Mariana Islands).
 " 11th, 23^h 53^m earthquake, II at Tacloban (NE of Leyte).
 " 18th, 15^h 54^m earthquake, II at Tacloban (NE of Leyte).
 " 18th, 21^h 52^m earthquake, III at Butuan (N of Mindanao).

M. Sadava M.

No. 32.

November 1st to 6th, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1.000 Kg.).

	T_0	ϵ	$\frac{\epsilon}{T_0^2}$
A_N	7.3	3	0.027
A_E	7.8	3	0.040

No.	Date	Charact.	Phase.	Greenwich		Period.	Amplitude		Δ	Remarks.
				mean time			A_N	A_E		
258	1	I_r	eP L M_N F	21 28 22 30 36 32 00 54		6	12			
259	2	I_r	e F	13 32 14 15						
260	2	I_d	eP L F	23 05 05 05 18 08						
261	3	I_r	eP L M_N F	6 07 07 09 03 09 19 39		7	137			
262	5	I_d	eP F	4 55 00 58						
263	5	I_r	eP eL M_N M_E F	12 35 39 36 38 37 12 38 11 51		6-7 5-6	167	43	Legaspi (SE of Luzon).	
264	6	I_r	eP L M_N F	6 22 20 23 00 23 38 31		2-3	28		Nueva Caceres and Legaspi (SE of Luzon).	
265	6	I_d	eP eL M_N F	7 20 48 20 57 21 03 23		-1-2	24			

No. 33.

November 7th to 11th, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1,000 Kg.)

	T.	ϵ	$\frac{r}{T^2}$
A_N :	7.3	3	0.027
A_E :	7.8	3	0.040

No.	Date	Character	Phase	Greenwich mean time		Period.	Amplitude		Δ	Remarks.
				A_N	A_E					
266	7	I_v	eP	7 52 00						
			eS	56 47						
			L_E	8 00 04						
			L_N	01 10						
			M_E	04 52	6		58			
			M_N	05 00	6	42				
			F	9 06						
267	8	III_v	eP	7 54 30						Origin Sorsogon (SE of Luzon). Maximum lost by pens being thrown off through force of shock.
			L	55 12						
			F	8 53						
268	8	I_v	eP	8 57 43						Aftershock. End overtaken by following earthquake.
			L	58 22						
			M_E	59 07	6-7		31			
269	8	I_v	eP	9 00 46						Aftershock.
			L	01 27						
			M_E	02 11	6-7		105			
			F	11						
270	8	I_d	eP	22 53 45						
			L	54 01						
			F	57						
271	9	I_v	eP	1 22 00						Aftershock.
			L	22 42						
			M_E	22 57	2-3		92			
			M_N	23 13	3-4	62				
			F	34						
272	9	I	eP	2 07 50						
			F	13						
273	10-11	I_d	L_i	23 59 25						Horizontal Pendulums.
			F	0 04						

No. 34.

November 11th to 19th, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1000 Kg.)

	T_0	ξ	$\frac{r}{T_0^2}$
A_{N} :	7.3	3	0.027
A_{E} :	7.8	3	0.040

No.	Date	Character	Phase	Greenwich mean time	Period	Amplitude		Δ	Remarks.
						A_{N}	A_{E}		
274	11	I_v	eP F	11 55 20 12 00					Aparri (NE of Luzon).
275	12	I	eP L F	6 31 00 31 54 37					
276	12	I_r	M F	15 29 00 42					
277	13	I_r	eP S L M_E M_N F	5 19 00 21 30 22 39 23 34 24 18 6 45	7-8 8-9	77	110		
278	13	I_d	eP L F	20 39 05 39 26 42					
279	17	I_d	eP F	10 38 00 40					
280	17	I_d	eP L F	14 07 27 07 44 11					
281	17	I	eP eL M_N F	20 34 00 34 27 34 46 39	1-2	45			
282	19	I_u	L F	15 10 55 40					Mexico?

No. 35a.

November 19th to 30th, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1,000 Kg.)

	T_0	ϵ	$\frac{T}{T_0^2}$
A_N	7.5	3	0.027
A_E	7.8	3	0.040

No.	Date	Character	Phase	Greenwich mean time	Period	Amplitude		Δ	Remarks.
						A_N H	A_E H		
283	19	I_d	eP L M_E F	21 55 46 56 02 56 06 59	1-2		46		
284	23	I_d	eP L M_E F	8 05 23 05 40 05 43 09	1-2		78		
285	23	I_d	eP L M_N F	10 31 08 31 24 31 31 36	1-2	66			
286	25	I_d	eP L M_N F	14 28 49 29 05 29 24 35	2-3	117			
287	29	I_v	eP L M_N F	22 47 27 48 06 48 50 59	4-5	147		Origin, Sarsoyon (SE of Luzon), after: hook.	
288	30	I_d	eP L F	22 15 03 15 13 17 00					

M. G. S. H.

No. 35 b.

November, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

Macroseisms not registered by the seismographs.

Greenwich mean time.

- November 5th, 12^h 14^m earthquake, III at Legaspi (SE of Luzon).
 " 5th, 12^h 44^m earthquake, III at Legaspi (SE of Luzon).
 " 8th, 7^h 47^m earthquake, III at Legaspi (SE of Luzon).
 " 8th, 8^h 06^m aftershock corresponding to the strong
 quake No. 267 felt in Albay and Sorsogon Pro-
 vinces (SE of Luzon).
 " 8th, 9^h 49^m aftershock, III, SE of Luzon.
 " 8th, 11^h 26^m aftershock, II, SE of Luzon.
 " 9th, 5^h 55^m earthquake, IV at Catbalogan (W of Samar).
 " 9th, 6^h 05^m earthquake, IV at Catbalogan (W of Samar).
 " 9th, 12^h 54^m 30^s aftershock, II, SE of Luzon.
 " 11th, 9^h 56^m aftershock, II, SE of Luzon.
 " 11th, 11^h 54^m aftershock, II, SE of Luzon.)
 " 12th, 13^h 41^m aftershock, II, SE of Luzon.
 " 13th, 5^h 49^m earthquake, IV at Butuan (N of Mindanao).
 " 15th, 1^h 25^m aftershock, II, SE of Luzon.
 " 23rd, 1^h 31^m earthquake, IV at Catbalogan (W of Samar)
 and II at Tacloban (NE of Leyte).
 " 25th, 2^h 50^m earthquake, III at Batangas (S of Luzon).
 " 30th, 12^h 46^m 30^s aftershock, II, SE of Luzon.

A. Soderstrom.

No. 36.

December 1st to 7th, 1912

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1,000 Kg.)

	T.	ϵ	$\frac{\tau}{T^2}$
A_N	7.3	3	0.027
A_E	7.8	3	0.040

No.	Date	Character	Phase	Greenwich mean time		Period	Amplitude		Δ	Remarks.
							A_N μ	A_E μ		
289	1	I _d	eP F	7 54 59 57						
290	1	II	eP L M _E M _N F	8 26 21 27 52 31 25 31 48 9 51	11-12 10-11	603	620			
291	1	I	eP	9 22 37						The end is indefinite because it is interactive in the preceding quake.
292	1	I	eP	9 32 43						Do.
293	3	I _d	eP L F	16 19 43 20 04 23						
294	5	I _d	eP L F	17 01 09 01 23 04						
295	6	I	eP L M _N F	1 02 36 02 55 03 07 08	0.5	164				
296	6	I	L F	14 41 15 00						Early phases are confused by pulsatory oscillations.
297	7	II	eP L M _E F	0 13 04 13 35 13 54 28	1-2		618			
298	7	I	eP L M _N M _E F	21 32 31 32 45 32 47 32 47 40	1-2 1	250	120			

No. 37.

December 7th to 17th, 1912.

Manila, P. I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1,000 Kg.)

	T.	ϵ	$\frac{r}{T^2}$
A_N	7.3	3	0.027
A_E	7.8	3	0.040

No.	Date	Character	Phase	Greenwich mean time	Period	Amplitude		Δ	Remarks.
						A_N r	A_E r		
299	7	I	e S L M_N M_E F	23 06 12 58 19 27 21 12 21 12 57	6 6-7	28	37		
300	8	I	eP L	11 27 22 27 48	7				End overtaken by following earthquake.
301	8	I_d	eP L F	11 31 00 31 17 37					
302	8-9	II_r	eP S_N S_E L_N L_E M_N M_E F	23 54 56 0 00 07 00 25 05 59 06 08 13 50 16 45 56	5-6 6 13-14	47	54		
303	9	I_r	e F	8 54 13 9 26					
304	9	I_r	e F	9 57 10 25					
305	16-17	I_r	e F	23 40 0 07					
306	17	I_d	eP L M_N F	7 24 25 24 40 24 42 29	1	33			
307	17	I_d	eP F	9 17 58 21					

No. 38.

December 17th to 28th, 1912.

Manila, P.I.

Seismological Bulletin of the Observatory.

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

Instrument: Wiechert's static pendulum (1,000 kg)

	T.	ϵ	$\frac{1}{T^2}$
A_x	7.3	3	0.027
A_E	7.8	3	0.040

No.	Date	Character	Phase	Greenwich		Period	Amplitude		Δ	Remarks.
				mean time			A_x μ	A_E μ		
308	17	I _d	eP L F	15 19 16 19 30 22						
309	17	I _d	iP F	16 10 50 12						
310	19	I _d	eP F	11 36 02 40						Record barely discernible by pulsatory oscillations
311	20	I _r	e F	20 06 49						Motions of a distant earth- quake confused by pulsatory oscillations.
312	22	I _r	e F	9 06 39						
313	24	II	eP L M _x M _E F	0 00 00 00 50 02 06 03 36 1 24	6 11	476 482				
314	24	II _r	eP S _E S _N L _N L _E M _N M _E F	18 09 43 11 34 11 36 13 32 13 40 15 38 17 51 19 48	13 11-12	152 224				Formosa.
315	26	II _r	eP L M _N F	9 10 25 11 20 11 56 20	6	328				Southeastern Luzon and Samar.
316	28	III _r	eP L F	8 01 10 02 09 9 55						Samar and Leyte.

No. 39a.

December 28th to 31st, 1912.

Manila, P.I.

Seismological Bulletin of the Observatory.

$\phi = 14^{\circ} 34' 41''$ N.

$\lambda = 120^{\circ} 58' 33''$ E.

$h = 2.40$ m.

Alluvium.

Instrument: Wiechert's static pendulum (1,000 Kg.)

	T_0	ϵ	$\frac{\epsilon}{T_0^2}$
A_N	7.3	3	0.027
A_E	7.8	3	0.040

No.	Date	Character	Phase	Greenwich mean time		Period	Amplitude		Δ	Remarks
							A_N	A_E		
317	28	I	eP	15	55 50	8	138	100		
			L	56 50						
			M_N	57 28						
			M_E	57 47						
318	29	I	eP	10	30 24	1-2	252			
			L	30 40						
			M_E	30 51						
			F	41						
319	29	I _r	e	21	46	10-11	30			
			M_E	58 30						
			F	22 17						
320	30	II	eP	8	29 23	6-7	595	194		
			L	30 35						
			M_{N1}	31 12						
			M_{E1}	31 12						
			M_{N2}	33 08						
			M_{E2}	34 14						
			M_{N3}	34 28						
321	31	ID	iP	8	16 15					
			F	18						
322	31	I _r	eP	14	34 28	7	17			
			M_N	40 07						
			F	57						

M. Ladera