

Matuyama JAPAN

SEISMIC BULLETIN

of the Matuyama Meteorological Observatory of Japan.

$\varphi = 33^{\circ}50'N$ $\lambda = 132^{\circ}45'E$ $h = 31.4m$

Wiechert Seismograph
(Horizontal & Vertical)

	T_0	ϵ	$\frac{V}{T_0^2}$	V
A E:	39/10	2	0.04	30
A N:	27/10	2	0.02	75
A Z:	30/10	5	0.04	76

Omori seismograph
Horizontal Pendulum

	T_0	ϵ	$\frac{V}{T_0^2}$	V
A E:				
A N:				



Time : all determinations are reduced to green-wich civil time

Matuyama Observatory *January 1931*

No.	Date	Phase	Time G.M.C.T.			Period	Amplitude			Δ k.m	Remarks
			h	m	s		AE	AN	AZ		
1	Jan. 4	SP	9	04	8.9	0.7	-slight	-slight		108.	
		S		04	24.0	0.8	-17	-13			
		M		04	25.1	0.6	+44	+40			
		C		04	41.1	0.6	-11	-64			
		F	9	06	5.2						
2	" 13	SP	1	42	53.5						
		EF	1	44							
3	" 15	SPZ	22	39	29.3	0.5			0.3	208.	
		SPEN	22	39	29.9	0.8	-1	-0.6			
		L	22	39	57.3	1.0	+44	+29			
		M ₁	22	39	59.6	0.6	-122	-97			
		M ₂ N	22	40	1.9	0.6		+113			
		M ₂ F	22	40	2.1	0.8	+139				
		M ₃ F	20	40	4.8	0.7	-217				
		M ₃ N	20	40	4.8 1.0	1.0		-227			
		M ₄ F	20	40	9.0	1.0	-289				
		M ₄ N	20	40	9.0	1.0		-186			
		M ₅ N	20	40	14.0	0.8		-97			
		M ₅ F	20	40	14.3	0.6	-122				
		M ₆ N	20	40	17.7	0.8		-142			
M ₆ F	20	40	17.7 18.0	0.7	+167						
F	22	43	12								
4	" 16	SP	6	02	40	3.1?				2316.	
		L	6	06	44.1	2.2					
		M ₁	6	07	14.6	0.3					
		M ₂	6	07	45.6	0.6					
		C	6	08	42.5	5.2					
		F	6	25	26						
5	" 23	SP	6	15	10.2	0.6	+6	+3		61.	
		S	6	15	18.4	0.6	-35	-24			
		M ₁	6	15	21.0	0.8	-139	-105			
		M ₂	6	15	24.0	0.7	+67	+77			
		M ₃	6	15	25.8	0.8	+76	+53			
		M ₄	6	15	27.7	0.8	+56	+45			
		SP	6	15	32.0	1.0	+28	+19			
		F	6	18	40						
6	" 23	SP	19	47	39	0.5	-6	-3	-7	62.	
		S	19	47	12.2	0.5	+56	+35			
		M ₁ N	19	47	14.3	0.8	-78	-56			
		M ₁ Z	19	47	14.5	0.6			+11		
		M ₂ Z	19	47	16.2	0.5			-9		
		M ₂ N	19	47	17.5	0.8	+100	+56			
		M ₃ N	19	47	22.2	0.8	+56	+26			
		M ₃ Z	19	47	17.6	0.5			-10		
		F	19	50	36						
7	" 28	SP	5	15	39.0					5465.	
		S	5	20	50.3		-3				
		L	5	27	44.6	13.0	-4				
		M ₁ F	5	28	45.8	13.0	+93				
		M ₂ F	5	29	18.5	13.5	-179				
		L ₁ F	6	37	7.8						

Matuyama JAPAN

SEISMIC BULLETIN

of the Matuyama Meteorological Observatory of Japan.

$\phi = 33^{\circ}50'N$ $\lambda = 132^{\circ}45'E$ $h = 31.4m$

Wiechert Seismograph
(Horizontal & Vertical)

	T_0	ϵ	$\frac{V}{T_0^2}$	V
A E:				
A N:				
A Z:				

Omori seismograph
Horizontal Pendulum

	T_0	ϵ	$\frac{V}{T_0^2}$	V
A E:				
A N:				



Time : all determinations are reduced to green-wich civil time

Matuyama Observatory

1931

No.	Date	Phase	Time G.M.C.T.			Period	Amplitude			Δ k.m	Remarks
			h	m	s		AE	AN	AZ		
							micron	micron	micron		
8	Jan. 29	ipz	6	29	32.6	2.1			+3	4930.	
		ipe	6	29	35.7	3.6	2.7				
		S	6	33	36.9	5.2	+2				
		L	6	4	16.1	10.4	+4				
		Mz	6	41	38.8	15.5	11.4		+14		
		ME	6	41	57.9	13.0	+3				
9	31	F	7	55	16					69.	
		ip	0	46	31.9	0.5		-1.7			
		S	0	46	41.2	0.6		-1.3			
		M	0	46	43.3	0.6	± 4.0	-5.6			
		C	0	46	55.2	0.8		-2.3			
10	Feb. 2	F	0	48	32					110.	
		ipv	6	07	37.1	0.6		-0.7			
		S	6	07	51.9	0.6		-4			
		M	6	07	55.2	0.6		+1.3			
		Mz	6	07	57.5			+1.7			
11	" 3	F	6	09	49.1					98.	
		ipw	17	28	43.9	0.6		-0.5			
		S	17	29	7.1	0.7		-2			
		M	17	29	8.1	0.6		± 6			
12	" 5	F	17	30	32					189.	
		ep	3	55	32.0						
		L	3	55	57.4	0.8		-2			
		MN	3	56	0.8	0.6		+1.3			
		ME	3	56	2.9	0.8	+6				
13	" 7	Fz	3	57	58.6					99.	
		ip	0	16	6.6	?		slight			
		S	0	16	20.0	0.6					
		MIE	0	16	22.4	0.7	+1.3				
14	" 9	MN	0	16	22.6	0.6		+1.4		92.	
		F	0	18	17.8						
		ep	2	20	9.8						
		S	2	20	13.2	0.6	-5	-5			
15	" 10	M	2	20	15.3	0.5		± 7		84.	
		F	2	22	32.1						
		ep	15	42	50.8						
16	" 11	F	15	45	22.					1350	
		ipw	4	44	15.1	0.6		-1			
		S	4	44	26.4	0.8	-1.3	-1.3			
17	" 17	M	4	44	27.4	0.8		± 2.9		904.	
		F	4	46	4.6						
		ipz	3	51	21.1	1.1		-1			
18	" 20	L	3	53	43.8	4.3			+3	189.	
		M	3	54	2.7	7.0			+6		
		F	4	05	5.6						
		ip	14	35	56.4	5.6	-12.7	-2.70			
		S	14	37	58.2	5.0	-5.0	-6.2			
19	" 22	ME	14	38	4.2	5.5	± 8.3			235.	
		MN	14	38	5.6	5.2					
		F	15	05	59.6				-1.76		
		ep	4	07	32.6						
		S	4	07	58.0	0.5	+1.3	+1.0			
20	" 26	M	4	07	59.9	0.5		+1.7		189.	
		C	4	08	1.8	0.6		+2.6			
		F	4	08	4.1		± 4	± 4			
		ipw	5	30	38.9	0.8		-1			
		SN	5	31	10.6	0.6		+1.0			
20	" 26	M1	5	31	12.1	0.8	+5.8	+7.1		235.	
		M2	5	31	15.6	0.8	+8.3	+8.8			
		F	5	34	5.						

Matuyama JAPAN

SEISMIC BULLETIN

of the Matuyama Meteorological Observatory of Japan.

$\phi = 33^{\circ} 50' N$ $\lambda = 132^{\circ} 45' E$ $h = 31.4m$

Wiechert Seismograph
(Horizontal & Vertical)

	$\sqrt{T_0}$	E	$\frac{V}{T_0^2}$	$\frac{V}{T_0}$
A E:	53	5	0.03	7.4
A N:	66	3	0.07	5.2
A Z:	41	5	0.03	4.8

Omori seismograph
Horizontal Pendulum

	T_0	E	$\frac{V}{T_0^2}$	V
A E:				
A N:				



Time : all determinations are reduced to green-wich civil time

February, March

Matuyama Observatory

1931,

No.	Date	Phase	Time G.M.C.T.			Period	Amplitude			Δ	Remarks
			h	m	s		AE	AN	AZ		
							micron	micron	micron		
21	Feb. 28th	ep	1	11	15.0						
		F	1	11	59						
22	March 5th	epv	2	0	52				200,		
		LN	2	0	32.1						
		F	2	1	46						
23	5th	ipE	2	45	13.4	0.4		+7	106,		
		ipEN	2	45	14.7	0.5		-2			
		S	2	45	29.0	0.6		+7			
		MIN	2	45	30.5	0.6		+41			
		M1E	2	45	30.7	1.0			+2		
		M2N	2	45	31.8	0.6		+32			
		M3N	2	45	34.1	0.6		+26			
		M2E	2	45	34.9	1.0			+20		
		F2	2	46	24.4						
24	5th	F	2	47	43.						
		ip	3	06	13	0.6	+slight	+3			
		ipE	3	06	20	0.7			-3	49,	slight shock,
		ip	3	06	15	0.2	-8	-7			
		S	3	06	7.9	0.4	-75	-76			
		M	3	06	8.4	0.5	+142	+99			
		M2	3	06	8.9	0.4			+54		
		F2	3	07	24.						
25	5th	FEN	3	08	13.						
		ipE	4	33	13.3						
		ep	4	33	12.3				109,		
		SN	4	33	27.0	0.6			-3		
		MIN	4	33	28.1	0.6			+15		
		M2N	4	33	30.6	0.6			+15		
		EN	4	25	11.7						
26	7th	ep	1	10	37.4						
		F	1	18	7.						
27	7th	ep	1	54	86.4						
		F	1	57	56.						
28	9th	ip	12	51	19.0	2.1	slight	?			
		S2	12	53	37.7	5.2			+25	1220,	
		L2	12	54	20.4	6.3			-55		
		M1E	12	55	7.0	7.5	-47.9				
		MN	12	55	23.9?	11.5?			+22.7		
		M2	12	55	50.9	2.5					
		F2	13	29	23.				-142		
		F	13	32	30.						

Matuyama JAPAN

SEISMIC BULLETIN

of the Matuyama Meteorological Observatory of Japan.

$\varphi = 33^{\circ}50'N$ $\lambda = 132^{\circ}45'E$ $h = 31.4m$

Wiechert Seismograph
(Horizontal & Vertical)

	T ₀	E	$\frac{V}{T_0^2}$	V
A E:	7.4	5	0.03	53
A N:	5.2	3	0.07	66
A Z:	4.8	5	0.03	41

Omori seismograph
Horizontal Pendulum

	T ₀	E	$\frac{V}{T_0^2}$	V
A E:				
A N:				



Time : all determinations are reduced to green-wich civil time

March, April Matuyama Observatory 1931.

No.	Date	Phase	Time G.M.C.T.			Period	Amplitude			Δ k.m	Remarks	
							AE	AN	AZ			
							micron	micron	micron			
							h	m	s	s		
29	march 17th	ep	18	46	54.7					267		
		epz	18	46	55.0							
		L?	18	47	20.7							
		ME	18	47	24.8	1.0	+7					
		MN	18	47	26.7	1.0		+1?				
30	25th	F	18	51	26.					78		
		ep	19	25	43.0	0.6		-2				
		es	19	25	53.5	0.5		-6				
		M	19	25	55.8	0.8		+12				
31	28th	F	19	27	12.					131		
		ep	8	20	17.0	0.5		+3				
		S	8	20	34.7	0.7		+6				
		M1	8	20	36.5	0.6		+12				
		M2	8	20	41.0	0.7		+15				
32	31st	F	8	23	12.					212		
		ep	23	46	12.2							
		es	23	46	27.8	0.5		+6				
		L	23	46	40.8	0.6		+7				
		M	23	46	42.1	0.6		+32				
33	1st	F	23	48	41.					207		
		ep	5	45	41.5							
		L	5	46	9.4	0.8		+9				
		M1	5	46	11.7	0.7		-18				
		M2	5	46	15.2	0.7		+22				
34	9th	F	5	47	48.					255		
		ep	14	32	27.2	0.8	+2	+3				
		es	14	32	46.9	0.7		+14				
		M1	14	33	13.6	0.7		-79				
		M2	14	33	17.2	0.7		-66				
35	9th	M3	14	33	19.8	0.7		-70				
		F	14	36	30.0							
		MN	23	02	11.1	0.8		+9				
		F	23	04	24.0							
		L	0	24	16.8							
37	10th	F	0	25						97		
		ep	2	10	25.8	0.4	+2	+3				
		es	2	10	28.9	0.7	+7	+4				
38	10th	F	2	12	37.0							
		ep	8	04	31.5							
		F	8	07	40.							
39	21st	ep	9	03	22.2	0.5	-2	-2		441		
		S	9	04	21.6	1.0		-16				
		M	9	04	22.1	1.5		+30				
		F	9	11	22.							
		ep	11	40	2.8	0.8	+2	-1				
40	24th	S	11	40	17.3	0.6		-44				
		F	11	42	41.							
		ep	14	43	54.4							
41	28th	F	14	45	10.							
		ep	15	07	9.2							
42	28th	F	15	09	2.							
		ep	17	47	53.0							
43	28th	F	17	49	37.							
		ep	17	49	37.							
44	30th	ep	13	39	33.4					217		
		S	13	40	2.6	0.7?		+4				
		M	13	40	4.2	0.7?		+18				
		F	13	41	13.0							
		F	13	41	13.0							

Matuyama JAPAN

SEISMIC BULLETIN

of the Matuyama Meteorological Observatory of Japan.

$\phi = 33^{\circ}50'N$ $\lambda = 132^{\circ}45'E$ $h = 31.4m$

Wicthert Seismograph
(Horizontal & Vertical)

	T ₀	E	$\frac{V}{T_0^2}$	V
A E:	81	4	0.02	70
A N:	88	4	0.01	56
A Z:	41	3	0.1	62

Omori seismograph
Horizontal Pendulum

	T ₀	E	$\frac{V}{T_0^2}$	V
A E:				
A N:				



Time : all determinations are reduced to green-wich civil time

Matuyama Observatory

1931

No.	Date	Phase	Time G.M.C.T.			Period	Amplitude			Δ km	Remarks
			h	m	s		AE micron	AN micron	AZ micron		
45	May 3	ep	17	06	266						
		F	17	09	390						
46	" 12	ep	10	42	309						
		F	10	52	10						
47	" 13	ip	3	11	8.7	0.3	-0.8?	-1?		69km	
		SE	3	11	18.0	0.5	-5	-6			
		MN	3	11	18.4	0.4					
		ME	3	11	19.5	0.5	-10				
		F	3	12	20						
48	" 25	ip	17	56	4.0	0.4	-3?	-0.6?		45	
		M	17	56	10.3	0.8	+4	-2			
		F	17	56	37.0						
49	June 2	ip	11	38	55.9	1.5	+16	+3		445	
		es	11	39	55.9						
		M	11	39	59.3	5.0	-157	+310			
		F	11	51	59.3						
50	" 9	ip	14	09	32.9					-44 (slight)	
		ip	14	09	35.1	1.3	+4	+slight		858,	
		S	14	11	30.7	2.1	+3	+5			
		ME1	14	11	51.8	4.1	+16				
		MN1	14	11	52.7	3.1		-9			
		ME2	14	12	3.2	5.2	+21				
		MN2	14	12	9.2	4.1		± 16			
		ME	14	11	55.1	2.1				-6	
		FE	14	17	46.						
		F	14	20	45.						
51	" 11	ep	15	17	26.4						
		is	15	18	45.5	2.4	+7			659,	
		ME	15	19	13.2	4.1	-38				
		F	15	28	56.						
52	" 17	ip	21	11	4.0	2.0	0.2				
		ip	21	11	4.8	1.6				+0.3	
		is	21	12	36.0	3.0	+25	+13		683	
		MN1	21	12	49.3	3.9		+55			
		ME1	21	12	50.3	3.9	-51				
		ME	21	12	54.2	3.2				+53	
		ME2	21	13	3.6	5.1	-48				
		MN2	21	13	1.8	5.1		+71			
		C	21	13	52.3	4.1	+20	-2.9			
		F	21	28	30.						
		FE	21	23	30.						
53	" 21	ep	9	00	40.9					105,	
		is	9	01	55.0	0.6	+3				
		F	9	03	07.4						
54	" 22	ep	1	26	22.3						
		F	1	27	28.						

Matuyama JAPAN

SEISMIC BULLETIN

of the Matuyama Meteorological Observatory of Japan.

$\varphi = 33^{\circ} 50' N$ $\lambda = 132^{\circ} 45' E$ $h = 31.4m$

Wicthert Seismograph
(Horizontal & Vertical)

	T ₀	E	$\frac{V}{T_0^2}$	V
A E:	8.3	9	0.02	65
A N:	6.0	5	0.02	62
A Z:	4.7	5	0.04	50

} July

Omori seismograph
Horizontal Pendulum

	T ₀	E	$\frac{V}{T_0^2}$	V
A E:				
A N:				



Time : all determinations are reduced to green-wich civil time

Matuyama Observatory

1931

No.	Date	Phase	Time G.M.C.T.				Period	Amplitude			Δ k.m	Remarks
			h	m	s	s		AE micron	AN micron	AZ micron		
55	June 23	ip	15	16	50.6	3.2	-5	+3		937	937	
		is	15	18	56.9	4.2	+8	+25				
		M ₁	15	19	19.1	3.8	+49	-60				
		M ₂	15	19	42.1	4.0	+56	-62				
		C	15	20	35.9	5.3	+18	-23				
		F	15	34	14.							
56	" 29	ip	14	22	39.6	0.5	-0.6?	-0.5?		89		
		is	14	22	51.6	0.5	+5	+4				
		ME	14	22	52.9	0.4	-13					
		MN	14	22	52.4	0.4		-12				
		EC	14	22	59.2							
		F	14	24	51.							
57	" 30	ip	1	44	20.6	0.9	+3	-2		381		
		ipz	1	44	20.2	0.9						
		S	1	45	12.0	4.2	+75	-67				
		ME	1	45	15.6	5.3	-81					
		MN	1	45	15.2	3.2		+107				
		ME	1	45	12.3	?			+8			
		Fz	1	48	30							
		F	1	59	30.							
58	July 1	ip	15	43	8.3					180		
		is	15	43	32.6	0.7	+2	+5				
		F	15	44	43							
59	" 5	ip	1	02	54.7	1.0	+2	-3		171		
		is	1	03	17.7	0.5	-2	-4				
		ME	1	03	22.4	0.5	+20					
		MN	1	03	23.7	0.5		+27				
		C	1	03	35.4	0.8	+3	+6				
		F	1	07	00							
60	" 13	ip	1	50	28.7	4.2		-2				
		is	1	54	36.5	6.5	+11	+8				
		MN	1	54	42.8	6.5		-10				
		ME	1	54	45.5	6.5	+28					
		F	2	22	30.							
61	" 18	ip	2	54	28.1							
		F	2	57	5.							
62	" 23	ipv	23	28	43.0	2.7?		-0.8?		4706		
		is	23	35	15	3.1	+14	+5				
		MN	23	35	9.1	5.2		+10				
		ME	23	35	13.2	4.1	+37					
		F	23	46	15.							
63	" 24	ip	20	38	31.6							
		F	20	40	55.							
64	" 31	ipe	0	16	59.5	0.9	-0.7			163		
		is	0	17	21.5							
		F	0	18	25.							

Matuyama JAPAN

SEISMIC BULLETIN

of the Matuyama Meteorological Observatory of Japan.

$\phi = 33^{\circ} 50' N$ $\lambda = 132^{\circ} 45' E$ $h = 31.4m$

Wiechert Seismograph
(Horizontal & Vertical)

	T_0	ϵ	$\frac{V}{T_0^2}$	V
A E:	83	9	0.02	65
A N:	80	5	0.02	62
A Z:	47	5	0.04	50

Omori seismograph
Horizontal Pendulum

	T_0	ϵ	$\frac{V}{T_0^2}$	V
A E:				
A N:				



Time : all determinations are reduced to green-wich civil time

August 1931

Matuyama Observatory

No.	Date	Phase	Time G.M.C.T.			Period	Amplitude			Δ k.m	Remarks	
							A E	A N	A Z			
			h	m	s	s	micron	micron	micron			
65	Aug.	9	$\sim P$	2	01	49.9	11	-2	-2		438,	
			$\sim S$	2	02	48.9	18	-2	+2+4			
			ME	2	02	50.0	2.0	+7				
			MN	2	02	50.2	2.6		+9			
			F	2	06	40.						
66	,	10	$\sim P$	13	59	11.7					44,	
			$\sim S$	13	59	17.6	0.8	+3	+3			
			ME	13	59	18.2	0.7	-7				
			MN	13	59	18.4	0.7					
			F	14	00	2.						
67	,	10	$\sim PZ$	17	00	46.6	0.5			-2	44,	
			$\sim P$	17	00	47.4	0.4	+2	+4			
			$\sim S$	17	00	53.3	0.8	+55	+46			
			M/Z	17	00	54.0	0.6			-28		
			MN	17	00	54.1	0.6		-72			
			ME	17	00	54.3	0.6	+70				
			M/Z	17	00	55.9	0.4			+30		
			M/Z	17	00	57.0	0.5			+28		
			C	17	00	58.9	0.8	+8	+5			
			FZ	17	03	14.0						
68	,	10	$\sim P$	23	35	10.2	2.0?	-0.8?	-0.3?		55/,	
			$\sim S$	23	36	24.4	1.0	-5	-13			
			MN	23	36	38.7	2.3		± 80			
			ME	23	37	44.1	1.9	-40				
			MZ	23	36	52.3	1.6			+35		
			C	23	37	33.2	2.5	+14	+6			
			FZ	23	41	-						
			F	23	42	-						
69	,	11	$\sim PZ$	6	25	30.7					2950,	
			$\sim P$	6	25	32.0						
			$\sim S$	6	31	22.6	9.2	-50	+23			
			L	6	35	01	23.6	+153	+56			
			MN	6	38	21.2	18.9		+2750			
			ME	6	40	38.8	14.2	+1000				
			M/Z	6	40	40.7	27.0			-770		
			M/Z	6	41	7.9	26.0			+754		
			FZ	7	40	38.						
70	,	13	$\sim PE$	17	36	5.2	0.6	+2			55	
			$\sim SE$	17	36	12.6	0.6	+8				
			ME	17	36	13.6	0.6	-15				
			F	17	38	13.						
71	,	15	$\sim P$	21	46	4.4	0.8	-2	-slight			
			$\sim PZ$	21	46	4.3	1.1			+4		
			$\sim S$	21	47	51.5						
			FE	21	52	2.						

Matuyama JAPAN

SEISMIC BULLETIN

of the Matuyama Meteorological Observatory of Japan.

$\phi = 33^{\circ}50'N$ $\lambda = 132^{\circ}45'E$ $h = 31.4m$

Wiechert Seismograph
(Horizontal & Vertical)

	T ₀	E	$\frac{V}{T_0^2}$	V
A E:	83	9	0.02	65
A N:	80	5	0.02	62
A Z:	47	5	0.04	50

Omori seismograph
Horizontal Pendulum

	T ₀	E	$\frac{V}{T_0^2}$	V
A E:				
A N:				



Time : all determinations are reduced to green-wich civil time

August 1931

Matuyama Observatory

No.	Date	Phase	Time G.M.C.T.				Period	Amplitude			Δ k.m	Remarks
			h	m	s	s		AE	AN	AZ		
								micron	micron	micron		
72	Aug. 18	ep	1	38	42	0.8	+2?			55.		
		es	1	38	11.6	0.8	+3	-6				
		MN	1	38	12.6	0.6		+12				
		ME	1	38	13.2	0.6	+12					
		F	1	38	46.							
73	" 18	ep	2	52	38.1				70.7			
		es	2	54	13.4	1.3	+4	+5				
		F	3	00	3.							
74	" 18	ep	14	42	4.7				91.1			
		es	14	44	8.2							
		F	14	48	23.							
75	" 18	ep	23	27	53.7							
		epz	23	27	54.2							
		L	23	42	35.5	10.3	-68	-34				
		MZ	23	42	58.3	12.2				-98		
		ME	23	43	14	12.4	-297					
		MN	23	43	86	14.4		+52				
		C	23	43	53.1	13.4	+40	+24				
		FZ	23	56	58.0							
F	17 ⁰⁰	17	58									
76	" 19	epz	10	28	19	0.6			+8	64		
		ep	10	28	2.3	0.5	-70	-25				
		es	10	28	10.9	0.5	+25	+48				
		M	10	28	12.1	0.5	-77	+121				
		M2N	10	28	16.3	0.6		+121				
		M2R	10	28	16.5	0.6	+115					
		MZ	10	28	17.9	1.2			-102			
		C	10	28	21.6	0.8	+41	+38				
		F	10	33	58.							
		FZ	10	31	28.							
77	" 28	epz	0	36	56.3	19?			+2	55		
		ep	0	36	57.0	10	+3<	+1				
		el	0	54	50.6	16.9	+10	+10				
		M2N	0	58	38.0	21.2		+58				
		M2N	1	00	38.8	18.9		+52				
		M1E	1	04	34.0	14.6	+96					
		MZ	1	04	51.4	15.1			+50			
		M2F	1	05	50.9	12.1	-109					
		FZ	1	04	21.							
		F	1	38	21.							

Matuyama JAPAN

SEISMIC BULLETIN

of the Matuyama Meteorological Observatory of Japan.

$\varphi = 33^{\circ}50'N$ $\lambda = 132^{\circ}45'E$ $h = 31.4m$

Wiechert Seismograph
(Horizontal & Vertical)

	T_0	ϵ	$\frac{V}{T_0^2}$	V
A E:	7.7	7	0.02	65
A N:	6.3	4	0.01	68
A Z:	4.6	5	0.04	50

Omori seismograph
Horizontal Pendulum

	T_0	ϵ	$\frac{V}{T_0^2}$	V
A E:				
A N:				



Time : all determinations are reduced to green-wich civil time

Matuyama Observatory

September 1931

No.	Date	Phase	Time G.M.C.T.			Period	Amplitude			Δ km	Remarks
							A E	A N	A Z		
							micron	micron	micron		
78	Sep 6	ep	h	m	s	s				67	slight,
		epZ	14	20	34.2	0.2	-3	-4	-8		
		is	14	20	35.1	0.2					
		ME	14	20	43.2	0.6	+63	+16?			
		MN	14	20	43.8	0.5	-72				
		MZ	14	20	44.1	0.5		-37			
		MZ	14	20	46.4	0.3			-25		
		C	14	20	50.9	0.8	+12	+7			
		FZ	14	23	9.						
		FN	14	23	42.						
79	" 9	ep	3	10	42.4	?				1330	
		is	3	12	54.6	5.2	+9	+11			
		is	3	13	14.6	5.4	+7	+7			
		MN	3	13	22.9	3.3		+29			
		ME	3	14	25.9	9.3	-24				
		C	3	14	58.9	8.2	+8	+6			
		FZ	3	22	200?						
		epZ	5	42	28.9	3.0			+6		
80	" 10	ppZ	5	42	59.9	4.2			+38	2890	
		pppZ	5	43	15.6	8.0			+26		
		LZ	5	45	52.4	9.4			-16		
		MZ	5	45	58.3	6.6			+32		
		FZ	5	52							
		ep	22	08	41.3						
81	" 12	F	22	11							
		epZ	21	44	27.2					588	
ep	21	44	27.3								
is	21	45	47.2	5.7	+31	+45					
MZ	21	46	5.6	3.3			+136				
MN	21	46	5.9	6.6		+195					
ME	21	46	24.7	3.7	-150						
C	21	46	45.1	4.1	+13	+7					
FZ	21	51	42								
82	" 18	FN	21	59	26.						
		ep	15	14	57.5						
		F	15	20	39.						
84	" 21	epZ	7	43	8.4	0.4			-10?	90	
		ip	7	43	8.5	0.6	+9	+4			
		is	7	43	20.6	0.8	-14	+21			
		ME	7	43	21.1	1.0	+23				
		MN	7	43	21.4	1.0		-27			
		M2FE	7	43	28.4	1.0	+23				
		M2IV	7	43	29.0	0.8		-17			
		FZ	7	44	30.						
		F	7	46	48						
		85	" 21	ep	11	21	28.0	2.0			
is	11			23	2.3	4.2		-1	+2		
MN	11			23	20.1	6.7		-95			
ME	11			23	26.6	4.8	+500	+750			
M1Z	11			23	21.1	3.3			-315		
M2N	11			23	30.4	6.2		+700			
M2Z	11			23	32.3	6.5			-365		
M2E	11			23	38.1	4.3	+500				
M3N	11			23	47.8	6.2		+800			
M3E	11			23	48.6	4.8	+500				
M3Z	11			23	54.8	4.9			+312		
F	11			39	49.						

Matuyama JAPAN

SEISMIC BULLETIN

of the Matuyama Meteorological Observatory of Japan.

$\phi = 33^{\circ}50'N$ $\lambda = 132^{\circ}45'E$ $h = 31.4m$

Wiechert Seismograph
(Horizontal & Vertical)

	T_0	ϵ	$\frac{V}{T_0^2}$	V
A E:	78	7	0.02	84
A N:	63	4	0.01	71
A Z:	46	5	0.04	50

Omori seismograph
Horizontal Pendulum

	T_0	ϵ	$\frac{V}{T_0^2}$	V
A E:				
A N:				



Time : all determinations are reduced to green-wich civil time

Matuyama Observatory *From Sep. 21, 1931 to Oct. 4 1931*

No.	Date	Phase	Time G.M.C.T.				Period s	Amplitude			Δ k.m	Remarks
			h	m	s	AE		AN	AZ			
						micron		micron	micron			
86	Sep. 21	ep	19	32	17.6				4220			
		LN	19	41	45	8.3		-20				
		MN ₁	19	41	16.3	8.1		+35				
		ME ₁ MN ₂	19	42	34.7	7.8	+46	+31				
		ME ₂	42	53.4	5.2		+44					
		M3N	43	19.3	8.4		+38					
		M3E	44	30.5	7.2		+46					
		C	45	8.3	6.3		-26	-22				
		F	20	07	56							
		87	" 22	ep	17	36	43.4	0.6?			-0.5?	-0.3?
MN	37			17.0	0.8		+18					
NS	36			43.1	0.8?			+14				
S	37			0.9	0.6		+4	+4				
M1E	37			21.0	0.9				-15			
M2E	37			23.2	0.4		-27					
M2E	37			24.4	0.8				+12			
MN ₂	37			26.1	0.6				-23			
ME ₂	37			30.3	0.5		-30					
FZ	17			39	8.8							
88	" 25	ep	15	08	27.7	3.9	+2	+1	Distant shock.			
		L	15	32	24.7	16.8	+13	+14				
		MN	15	33	16.3	16.8		+28				
		ME	33	25.4	16.2						-10	
		ME ₂	36	28.0	18.2	+36						
		FZ	15	41	33							
		F	16	02	28							
89	" 28	ep	13	55	42.0							
		NS	13	57	13.0	2.0	-3	-1				
		FZ	13	58	30.0							
90	" 28	ep	18	24	48.1				73			
		NS	18	24	58.0	0.8	- slight -					
		L	18	25	5.3	0.8	+4	+3				
		ME	18	25	7.0	0.6	-9					
		MN	25	8.0	0.8			+6				
91	" 29	ep	7	44	42.7							
		F	7	46	39							
92	Oct. 4	ep	4	24	34.6				Distant shock.			
		ep	4	24	37.3	1.7	-1	+1			+3	
		NS	32	15.3	6.7		+13	+11				
		L	38	22.0	33.7		+67	+42				
		MN ₁	39	40.9	16.2							
		M2E	39	46.2	17.8		-169				-63	
		M1E	42	5.6	24.9						-60	
		M2N	42	15.9	22.2			+110			+110	
		M2E	42	28.5	22.3		+275					
		M3E	43	22.4	21.9		-230					
		M2E	43	22.5	18.1						-40	
		M3E	44	21.3	18.5						+48	
		M4E	45	12.0	17.2						-80	
		M4E	46	50.6	18.9		+215					
		M4N	47	17.3	16.4						+103	
		M3N	46	2.2	18.9						+102	
		FZ	5	20	40							
F	5	57	17									

Matuyama JAPAN

SEISMIC BULLETIN

of the Matuyama Meteorological Observatory of Japan.

$\phi = 33^{\circ} 50' N$ $\lambda = 132^{\circ} 45' E$ $h = 31.4m$

Wiechert Seismograph
(Horizontal & Vertical)

	T ₀	E	$\frac{V}{T_0^2}$	V
A E:	28	7	0.02	84
A N:	63	4	0.01	71
A Z:	46	5	0.04	50

Omori seismograph
Horizontal Pendulum

	T ₀	E	$\frac{V}{T_0^2}$	V
A E:				
A N:				



Time : all determinations are reduced to green-wich civil time

Matuyama Observatory *From Oct. 4 to Nov. 2 1931*

No.	Date	Phase	Time G.M.C.T.			Period	Amplitude			Δ k.m	Remarks
							AE	AN	AZ		
							micron	micron	micron		
93	one Oct. 4	ep	7	05	226						distant shock
		es		13	162						
		eL		21	78						
		F	7	47	42						
93	two Oct. 4	ep	7	57	137						
		is	8	05	73	10.5	+18				
		eL	8	12	125	21.0	+23	+14			distant shock.
		ME		13	20	27.3	+52				
		MN		13	55	26.7		-23			
		F		44	59						
94	" 8	ep	1	04	440						
		is	1	04	546	0.7	+2	-1		79	
		F	1	05	37						
95	" 8	epZ	7	06	217	0.6					
		is		06	224	0.7	+3	+2			
		ME		06	32.6	0.6	+33	+28			
		MZ		06	33.6	0.5			-17		
		C		06	40.0						
		FZ	7	08	4						
96	" 10	FEN	7	08	12						
		is	9	28	58.3	3.3?	-14	-14			distant shock.
		L		36	15.8	8.6	-18	+8			
		MEI		42	5.4	27.0	+59	+28			
		MNI		43	15.1	30.3	-101				
		MZE		45	47.5	23.8		+49			
		MZ		46	10.8	21.6	-83				
		MZ		47	14.9	23.1			+52		
		MZ		48	16.0	18.4			-90		
		MZ		48	29.1	19.1	+98	+98			
		FZ	10	19	30						
		FZ	12	47							
97	" 24	is	8	29	26.9	1.0	-3	+1		467	
		F	8	30	29.9	1.5	-2	+2			
		F	8	33	15						
98	" 29	ep	17	43	23.5						
		F	17	54	27						
99	" 30	ep	17	43	23.5						
		F	17	54	27						
99	" 30	ep	3	54	58.1						
		F	4	08	52						
100	" 30	ep	19	32	12.9						
		F	19	34	2.5						
101	Nov. 2	epZ	3	53	45.1	1.0			3	248	
		is		53	45.8	1.0	+2	+4			
		ME		54	19.2	2.8	-172	+44			
		MZ		54	23.3	2.2			+194		
		MZ		54	28.0	2.0	+573				
		MN		54	46.4	1.1		-194			
		C		55	42.4	1.9	+35	+63			
		FZ	4	06	10						
		FZ	4	17	10						

Matuyama JAPAN

SEISMIC BULLETIN

of the Matuyama Meteorological Observatory of Japan.

$\varphi = 33^{\circ}50'N$ $\lambda = 132^{\circ}45'E$ $h = 31.4m$

Wiccheert Seismograph
(Horizontal & Vertical)

	T.	E	$\frac{V}{T^2}$	V
A E:	78	7	0.02	84
A N:	63	4	0.01	71
A Z:	48	5	0.04	50

Omori seismograph
Horizontal Pendulum

	T.	E	$\frac{V}{T^2}$	V
A E:				
A N:				



Time : all determinations are reduced to green-wich civil time

Matuyama Observatory *From Nov. 2 to Nov. 4 1931*

No.	Date	Phase	Time G.M.C.T.			Period	Amplitude			Δ k.m	Remarks
			h	m	s		AE micron	AN micron	AZ micron		
102	Nov. 2	epE	19	03	30.1	0.99	+3	+7	+slight	240	moderate
		ep		03	30.3	1.1					
		ME		04	10.3?	0.1?	+2000?				
		SE		04	2.4	1.8			+584		
		ME		04	12.4	0.4			+1248		
103	" 2	ep	19	32	21.4	0.6	+20	?		223	
		S		32	51.4	0.7	+66				
		ME		32	52.4						
		MN		32	52.9						
		F	19	39	26.						
104	" 2	ep	20	01	20	2.1	-2	-2?		232	moderate
		S	20	01	33.3	1.5	+470				
		ME	20	02	44.2?	?	+1170				
105	" 2	ME	20	07	55.5	?	+27		No 106 continuous		
106	" 2	ME	20	13	121	?	± 15		No 107 continuous		
107	" 2	ME	20	13	42.5	?	+18				
		F	20	16	30						
108	" 2	ep	20	24	122						
		SE	20	25	9.5	1.6	+15	-13		425	
		F	20	30	33						
109	" 2	ep	20	33	42.5						
		ME	20	34	12.7					207	
		F	20	40	30						
110	" 2	ep	20	47	46.3						
		S	20	48	16.3	1.6	-66	-131			
		ME	20	48	25.5	1.2			-168	223	
		ME	20	48	28.6	2.6	-275				
		MN	20	48	34.1	?		+185			
		C	20	49	7.1	2.0	-43	-20			
		F	20	58	41						
111	" 2	epE	21	11	29.6	0.9			-8	223	
		SE		11	59.6	0.9					
		ME		12	5.1	0.9			+20		
		FE		14	5.5						
112	" 2	ep	22	45	49.5						
		F	22	48	5.5						
113	" 3	epE	0	16	5.4						
		FE	0	18	1.0						
114	" 3	ep	0	27	11.1						
		F	0	28	5.5						
115	" 3	epE	0	48	47.7						
		SE	0	49	15.9					209	
		FE	0	50	57.6						
116	" 3	ep	4	34	40						
		MN	4	37	7.2	?		+29			
		F	4	37	30						
117	" 3	ME	9	42	12.0	?	+6				
		MN	9	42	12.3	?		+5			
		F	9	43	5.2						
118	" 4	ME	0	25	21.4						
		FE	0	28	2.3						

Matuyama JAPAN

SEISMIC BULLETIN

of the Matuyama Meteorological Observatory of Japan.

$\varphi = 33^{\circ} 50' N$ $\lambda = 132^{\circ} 45' E$ $h = 31.4m$

Wiechert Seismograph
(Horizontal & Vertical)

	T_0	E	$\frac{V}{T_0^2}$	V
A E:	78	7	0.02	84
A N:	63	4	0.01	71
A Z:	66	5	0.04	50

Omori seismograph
Horizontal Pendulum

	T_0	E	$\frac{V}{T_0^2}$	V
A E:				
A N:				



Time : all determinations are reduced to green-wich civil time

Matuyama Observatory *From Nov. 14th to Dec. 19th 1931.*

No.	Date	Phase	Time G.M.C.T.			Period	Amplitude			Δ	Remarks
							AE	AN	AZ		
			h	m	s	s	micron	micron	micron	k.m	
119	Nov. 14	up	13	29	34.8	0.7	+10	+2		67.	
		upz	13	29	35.4	0.7			+19		
		zS	13	29	43.8	1.1	+33	-20			
		M	29	44.8	0.5	-50	+45				
		Mz	29	44.9	0.9			-20			
		C	29	59.8	0.7	-5	+14				
		FE	31	3.0							
120	" 15	FEA	13	31	46.					101,	
		up	10	42	10.4	0.8	+1	+3			
		upz	10	42	11.1	0.6			+slight		
		S	10	42	24.0	1.0	-6	+7			
		MN	10	42	25.6	0.5		+25			
		ME	10	42	27.7	?	-15				
		Mz	10	42	28.5	0.7			-10		
121	" 15	FE	10	44	12.					183	
		up	23	36	31.5						
122	" 16	ES	23	36	56.2						
		F	23	37	32.						
123	" 16	ep	16	12	23.2						
		F	16	14	30.0						
124	" 27	ep	16	38	31.0						
		zS	16	38	40.6						
		MN	16	38	42.0	0.7	+9	+18			
		ME	16	38	42.6	1.0					
125	Dec. 15	upz	17	08	8.3						
		ep	08	10.1							
		M	08	14.4	0.7	-8	+10				
		Mz	08	13.3	0.2			+6			
		Fz	17	08	55.						
		FE	17	09	7.						
		ep	6	05	44.7						
126	" 15	zS	06	06	48.	1.0	-3	-3		149.	
		MEAN	06	06	50.	1.0	+7	+6			
		F	6	07	21						
		up	8	51	55.4						
		S	52	15.3	0.6	+8	-5				
		MN	52	15.9	0.6	+11	+15				
		MEz	52	18.2	0.8	+18					
127	" 19	MVz	52	19.7	0.9			+10		148.	
		CN	52	32.8	1.0			+8			
		FE	8	54	25.						
		ep	2	46	22.1						
		upen	46	24.5	0.6	-1	-1		-slight		
		upz	46	24.3	0.9						
		zS	46	58.0	0.8	-27	+35				
		ME	47	04	0.8	-45					
		MN	47	2.6	0.6		+44				
		MEz	47	5.1	1.0	-35					
		MVz	47	6.4	0.8		+50				
		MN3	47	10.1	0.8		-55				
		MEz	47	11.1	1.2	+38					
		Mz	47	7.6	1.9			-18			
		Mz	47	10.1	1.9			-18			
Mz	47	15.5	1.0			-20					
ME4	47	14.8	1.3	-44							
MN4	47	16.0	0.8		+40						
ME5	47	19.4	1.3	+45							
MN5	47	19.7	1.0		-43						
CN	47	31.5									
FE	2	5.3	30.								

Matuyama JAPAN

SEISMIC BULLETIN

of the Matuyama Meteorological Observatory of Japan.

$\varphi = 33^{\circ}50'N$ $\lambda = 132^{\circ}45'E$ $h = 31.4m$

Wiechert Seismograph
(Horizontal & Vertical)

	T_0	ϵ	$\frac{V}{T_0^2}$	V
A E:	9.266	7	402	61
A N:	6.266	7	204	60
A Z:	5.0	5	204	50

Omori seismograph
Horizontal Pendulum

	T_0	ϵ	$\frac{V}{T_0^2}$	V
A E:				
A N:				



Time : all determinations are reduced to green-wich civil time

Matuyama Observatory

December

No.	Date	Phase	Time G.M.C.T.			Period	Amplitude			Δ k.m	Remarks
			h	m	s		AE micron	AN micron	AZ micron		
128	Dec. 21 st	up	14	47	50.5	12	-2	-1	-2	267.	
		S		48	26.5	7.7	-13	-24			
		M1		48	30.4	1.4	+32	+43			
		M2E		48	34.6	1.2	+34				
		M3E		48	37.7	2.5	+46				
		M2N		48	38.2	4.5		-43			
		M2		48	45.3	4.1			-48		
		M3N		48	45.5	3.6		+63			
		C2		49	20			+30			
		Fi2	15	00	28.						
129	" 22 nd	up	22	08	32.1	?				266,	
		ep		08	32.4	11	-1	-slight	-slight		
		up		08	33.9	0.6	-3	-2			
		us		09	8.2	1.6	+25	+31			
		M2E		09	10.3	1.2			+50		
		M2N		09	10.6	0.9	-51				
		M2E		09	25.6	3.9			-50		
		MN1		09	11.2	0.9		+81			
		M2E		09	25.6	6.4	-70				
		C		09	52.9	2.4	+31	-26			
130	" 23 rd	up	19	52	56.7				305.		
		es	19	53	37.8						
131	" 26 th	up	10	43	30.5	13	-2	-1	-2	268.	
		ep		43	31.7	1.6					
		S		44	6.6	2.1	-30	-18			
		M1N		44	10.0	1.3		+89			
		M2N		44	25.5	5.5		-118			
		M1E		44	16.7	2.5			+88		
		M2E		44	27.3	4.7			-80		
		M1E		44	25.9	5.5	-80				
		C		44	51.6	2.8	-53	-51			
		Fi2	11	00	40.						
132	" 29 th	up	11	50	39.3	11	+2	+1		300.	
		es		51	19.9	0.9	-3	-3			
		Fi2		53	34.						
133	" 30 th	ep	12	42	57.7	0.8			+2	514.	
		up		42	59.7	1.0	-2	-1			
		ESE		44	9.0						
		Fi2		50	44.						

End