

**OSAKA JAPAN****SEISMOLOGICAL BULLETIN**  
of the Osaka Meteorological Observatory
 $\varphi = 34^{\circ} 39' N.$   $\lambda = 135^{\circ} 32' E.$  Gr. h = 3.4m Sub-Soil: Sandy Loam (Oldquaternary)
Instrument: Omori's Seismograph  
(Horizontal & Vertical)Wiechert Seismograph  
(Horizontal & Vertical)

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
$A_E$ :	30	-	0.003	20
$A_N$ :	30	-	0.003	20
$A_Z$ :	15	-	0.004	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
$A_E$ :	4	3.2	0.003	80
$A_N$ :	4	3.2	0.003	80
$A_Z$ :	6	2.0	0.005	80

No.	Date	Phase	G.M.T.			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h.	m.	s.		$A_E$ $\mu$	$A_N$ $\mu$	$A_Z$ $\mu$		
1	Jan. 1	P	23	51	44.4				3360		
		S		56	52.7						
		L	0	01	56.8						
		ME		04	30.8	3.7	+16				
		MN		05	13.0	3.7		-13			
		MZ		02	458.7	5.0					+7
		FE		15	07.5						
		FN		15	22.6						
FZ		15	02.0								
2	" 4	P	7	41	47.8				199		
		L		42	14.6						
		ME		42	39.5	1.9	-14				
		MN		43	09.4	2.4		+14			
		MZ		42	39.1	2.2					+4
		FE		45	22.1						
		FN		45	37.2						
		FZ		44	59.6						
3	" 6	P	3	25	10.5				346		
		L		25	57.2						
		ME		27	58.0	4.1	+11				
		MN		27	47.6	2.9		+8			
		MZ		26	37.5	2.8					-6
		FE		33	16.7						
		FN		33	28.5						
		FZ		32	43.2						
4	" 8	P	15	43	37.4				45	Near Kobe	
		L		43	43.7						
		ME		43	43.7	0.3	-3				
		MN		43	43.7	0.3		+4			
		FE		44	56.9						
		FN		45	11.9						
		FZ									
5	" 9	P	1	47	15.4				136		
		L		47	33.6						
		ME		49	57.0	3.5	+23				
		MN		49	37.9	2.3		+25			
		MZ		49	46.0	2.6					+13
		FE		58	41.9						
		FN		58	22.8						
		FZ		54	35.6						
6	" 15	P	2	08	47.3				11280	Mexico	
		S		20	39.5						
		L		37	02.8						
		MZ <sup>N</sup>		59	33.5	21.4		+525			
		MZ		59	05.2	18.8					+19
		FN	4	04	43.0						
		FZ	3	43	13.0						
		FZ									
7	" 15	P	13	40	20.8				430		
		L		41	18.8						
		ME		41	59.4	3.2	-19				
		MN		41	58.9	2.6		-21			
		MZ		41	57.2	2.9					-9
		FE		47	52.4						
		FN		47	54.5						
		FZ		46	35.0						

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No.	Date	Phase	G.M.T.			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h.	m.	s.		$A_E$ $\mu$	$A_N$ $\mu$	$A_Z$ $\mu$		
	Jan. 15	P	21	03	53.8				1503		
		L		06	31.1						
		ME		09	08.6	4.1	+218				
		MN		08	31.2	4.0		+168			
		MZ		08	07.6	6.2			+141		
		FE		37	29.7						
		FN		37	32.8						
		FZ		30	51.6						
	" 15	P	22	50	00.8				1224		
		L		52	11.2						
		ME		53	22.6	4.2	-13				
		MN		53	18.0	3.2		-10			
		FE	23	09	40.4						
		FN		09	25.3						
	" 16	P	1	29	51.0				1343		
		L		32	12.3						
		ME		33	48.3	3.3	$\pm 6$				
		MN		33	33.6	3.5		$\pm 7$			
		FE		38	41.0						
		FN		38	27.8						
		FZ		43	37.6						
	" 16	P	1	54	11.8				464		
		L		55	14.3						
		ME		56	10.6	2.8	$\pm 6$				
		MN		56	04.9	2.6		$\pm 6$			
		MZ		55	29.1	2.6			$\pm 3$		
		FE		59	02.8						
		FN		59	54.7						
		FZ		59	41.3						
	" 17	P	0	53	39.03				870		
		L		55	37.6						
		ME		56	41.1	2.6	-14				
		MN		56	22.6	3.3		-27			
		MZ		56	44.7	3.2			-11		
		FE	1	02	15.4						
		FN		02	16.3						
		FZ		01	19.9						
	" 17	P	16	54	49.3				124	Felt slightly.	
		L		55	05.9						
		ME		55	21.8	2.1	$\pm 30$				
		MN		55	58.9	2.3		-31			
		MZ		55	30.4	1.5			-134		
		FE		58	56.4						
		FN		58	59.5						
		FZ		58	56.2						
	" 21	P	9	00	48.8				948		
		L		02	57.4						
		ME		03	49.9	2.2	+17				
		MN		03	55.8	2.4		-32			
		MZ		04	08.5	2.8			-8		
		FE		09	58.3						
		FN		09	52.2						
		FZ		09	24.4						
	" 21	P	13	59	20.1				135		
		L		59	38.2						
		ME		59	46.0	1.2	-4				
		MN		59	42.9	1.0		+4			
		MZ		59	49.3	1.6			+1		
		FE	14	00	53.2						
		FN		00	54.3						
		FZ		01	07.9						
	" 22	P	17	00	42.1				507		
		L		01	50.3						
		ME		03	06.4	3.2	-19				

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## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory



No.	Date	Phase	G.M.T.			Period s	Amplitude			△ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
16	Jan. 22	ME	17	03	06.4	3.2	-19				
		MN		02	50.7	2.8		+29			
		MZ		02	47.0	2.7			+10		
		FE		11	31.7						
		FN		11	47.8						
		FZ		09	09.9						
17	" 22	P	21	15	30.8					171	
		L		15	53.8						
		ME		16	37.3	1.9	+8				
		MN		16	14.2	1.8		+11			
		MZ		16	24.7	1.5			+3		
		FE		19	12.0						
		FN		19	12.1						
		FZ		18	59.0						
18	" 23	P	10	47	27.3					165	
		L		47	49.5						
		ME		47	58.9	1.1	-8				
		MN		48	08.9	1.9		-10			
		FE		49	44.3						
		FN		49	51.4						
19	" 24	P	13	46	20.1					3337	
		S		51	26.9						
		L		55	35.1						
		MN		57	25.6	14.0		+500			
		FN		14	45	20.6					
20	" 24	P	14	40	31.0					763	
		L		42	13.8						
		ME		42	53.3	2.2	+11				
		MN		43	11.8	2.4		+12			
		FE		47	39.7						
		FN		47	47.8						
21	" 24	P	16	52	19.7					381	
		L		53	11.1						
		ME		53	42.8	2.2	±5				
		MN		53	36.5	3.2		+11			
		FE		57	53.2						
		FN		57	37.6						
22	" 27	P	20	16	02.8					3628	
		S		21	28.2						
		L		27	17.1						
		ME		32	06.6	16.0	-2750				
		MN		30	03.4	21.4		+1928			
		MZ		31	19.9	13.7			-166		
		FE	21	40	15.8						
		FN		39	26.1						
		FZ		23	40.2						
23	" 28	P	21	29	15.5					3218	
		L		34	13.7						
		ME		39	29.0	20.0	-1725				
		MN		37	25.3	28.1		-2705			
		FE	22	52	00.7						
		FN		49	56.0						
24	" 28	P	22	20	18.5					2976	
		S		24	59.9						
		ME		26	33.8	4.9	±13				
		MN		26	08.3	4.9		±11			
		FE		49	32.1						
		FN		46	10.0						

From Feb. 1th to Feb. 27th, 31. 19

# OSAKA JAPAN

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory



$\phi = 34^{\circ} 39' N.$   $\lambda = 135^{\circ} 32' E.$  Gr. h = 3.4m Sub-Soil: Sandy Loam (Oldquaternary)

Instrument: Omori's Seismograph  
(Horizontal & Vertical)

Wiechert Seismograph  
(Horizontal & Vertical)

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
$A_E$ :	30	-	0.003	20
$A_N$ :	30	-	0.003	20
$A_Z$ :	15	-	0.004	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
$A_E$ :	4	3.2	0.003	80
$A_N$ :	4	3.2	0.003	80
$A_Z$ :	6	2.0	0.005	80

No.	Date	Phase	G.M.T.			Period s	Amplitude			$\Delta$ k.m.	Remarks			
			h.	m.	s.		$A_E$ $\mu$	$A_N$ $\mu$	$A_Z$ $\mu$					
27	Feb. 1	P	21	08	10.5				120					
		L		08	26.6									
		ME		08	29.6	0.7	76							
		MN		08	27.8	0.7		-3						
		MZ		08	28.7	0.6					-1			
		FE		10	10.3									
		FN		10	26.9									
		FZ		10	08.2									
28	" 2	P	22	59	12.7				9044	New Zealand				
		S	23	09	25.4									
		L		22	28.6									
		ME		32	07.2	20.6	-245							
		MN		32	23.1	21.3		+853						
		MZ		32	05.2	21.7					$\pm 58$			
		FE		2	11	50.0								
		FN		12	15.9									
		FZ		0	05	24.1								
		29	" 4	P	18	55	15.6						76	
L				55	25.8									
ME				55	55.5	1.1	-23							
MN				55	59.2	1.4		+23						
MZ				55	53.7	1.6			-8					
FE				58	29.1									
FN				58	33.3									
FZ				57	22.6									
30	" 6	P	15	16	54.7				30					
		L		16	56.5									
		ME		16	58.7	0.9	+3							
		MN		16	58.7	0.7		+6						
		FE		18	22.4									
		FN		18	36.4									
		31	" 9	P	14	45	28.8						303	
				L		45	32.3							
ME				46	33.8	2.2	+13							
MN				46	35.0	2.4		$\pm 19$						
MZ				46	32.8	1.7			$\pm 6$					
FE				49	57.1									
FN				49	51.2									
FZ				49	03.0									
32	" 10			P	3	14	53.2				137			
				L		15	11.6							
		ME		15	12.0	1.1	+9							
		MN		15	17.5	2.0		+13						
		MZ		15	34.8	1.6			+6					
		FE		17	31.3									
		FN		17	26.5									
		FZ		17	07.4									
33	" 10	P	3	42	57.0				42					
		L		43	02.7									
		FE		46	53.3									
		FN		46	27.2									
		FZ		46	16.2									

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## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory



No.	Date	Phase	G.M.T.			Period s	Amplitude			△ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
34	Feb. 10	P	6	43	15.5	20.5	+175		5539		
34		S		50	27.4						
		L	7	03	49.7						
		MN		06	23.5						
		FN	8	30	26.6						
35	" 11	P	9	16	52.7	2.7	+13		496		
	L		17	59.5							
	ME		18	10.0							
	MN		18	27.3							
	MZ		18	52.1							
	FE		22	58.7							
	FN		22	48.6							
	FZ		21	38.5							
36	" 12	P	5	52	40.5	18.4			5972		
	S	6	00	15.1							
	MN		14	26.7							
	FN		40	59.7							
37	" 12	P	11	32	44.3	3.0	+7		339		
	L		33	29.9							
	ME		34	29.9							
	MN		33	56.6							
	FE		37	59.0							
	FN		37	58.3							
	FZ		37	28.7							
38	" 13	P	0	44	27.2	4.6	-19		2006		
	L		47	50.8							
	ME		48	57.4							
	MN		49	01.0							
	MZ		48	05.2							
	FE		1	03 33.7							
	FN		03	02.8							
	FZ		0	51 58.8							
39	" 13	P	1	39	44.6	21.4			9232		
	S		50	06.7							
	L	2	10	03.0							
	MN		12	56.0							
	MZ		12	33.2							
	FN		24	50.9							
	FZ		23	45.0							
40	" 16	P	18	50	52.9	4.8	-194		888		
	L		52	52.6							
	ME		54	31.7							
	MN		54	38.9							
	MZ		54	08.3							
	FE	19	11	51.7							
	FN		11	46.6							
	FZ		L0	23.4							
41	" 19	P	17	49	38.1	5.5	+6		5460		
	L		56	45.6							
	ME		58	33.3							
	MN		59	08.5							
	MZ		58	02.4							
	FE	18	06	16.1							
	FN		06	15.2							
	FZ		03	41.8							
42	" 19	P	18	33	17.3	3.6	+3		5814		
	L		40	43.5							
	ME		41	32.4							
	MN		41	59.2							
	MZ		41	17.7							
	FE		48	46.0							
	FN		48	16.6							
	FZ		45	00.6							

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Seismological  
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No.	Date	Phase	G.M.T.			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h.	m.	s.		$A_E$ $\mu$	$A_N$ $\mu$	$A_Z$ $\mu$		
43	Feb. 19	P	21	40	19.2				4581		
		L		46	38.06						
		ME		47	38.4	3.6	-5				
		MN		47	15.0	4.1		$\pm 5$			
		MZ		47	26.7	2.3					
		FE		56	57.9			$\pm 3$			
		FN		57	00.L						
		FZ		56	46.7						
44	" 20	P	5	35	44.4				827	N. of Japa Sea, W. 14 S. 26, U. 75.	
		L		37	35.9						
		ME		39	31.4	4.1	-469				
		MN		38	29.0	4.1		-509			
		MZ		38	10.6	3.6					
		FE	6	09	49.1			$\pm 453$			
		FN		08	39.2						
		FZ		06	39.4						
45	" 25	P	20	31	44.0				294		
		L		32	23.6						
		ME		32	47.7	1.8	+6				
		MN		32	40.4	1.8		$\pm 6$			
		MZ		32	35.6	1.8					
		FE		36	02.9			+5			
		FN		35	17.7						
46	" 27	P	9	44	17.8				3739		
		L		49	49.7						
		ME		51	189.7	3.8	+8				
		MN		51	20.6	3.8		-8			
		FE	10	04	45.5						
		FN		04	44.8						
		FZ		04	02.8						

(THE END)

# OSAKA JAPAN

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory



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	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
$A_E$ :	30	-	0.003	20
$A_N$ :	30	$\frac{1}{2}$	0.003	20
$A_z$ :	15	-	0.004	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
$A_E$ :	4	3.2	0.003	80
$A_N$ :	4	3.2	0.003	80
$A_z$ :	6	2.0	0.005	80

No.	Date	Phase	G.M.T.			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h.	m.	s.		$A_E$ $\mu$	$A_N$ $\mu$	$A_z$ $\mu$		
47	March 1	P	14	25	59.7				1029		
		L		28	18.5						
		ME		29	18.7	2.4	-11				
		MN		29	24.2	2.8		-23			
		MZ		28	35.8	3.6			-6		
		FE		35	40.0						
		FN		35	50.0						
		FZ		34	40.0						
48	" 2	P	2	28	54.3				1875		
		S		32	06.3						
		L		37	47.2						
		ME		39	05.2	4.8	+19				
		MN		39	46.2	3.3		+13			
		MZ		39	16.7	4.3			-13		
		FE		47	00.0						
		FN		47	20.0						
		FZ		44	40.0						
49	" 3	P	20	40	57.6				507		
		L		42	05.8						
		ME		42	37.6	2.2	+9				
		MN		42	51.4	2.0		+10			
		MZ		42	41.1	2.7			-8		
		FE		47	20.0						
		FN		47	30.0						
		FZ		46	00.0						
50	" 6	P	12	27	11.1				334		
		L		27	56.1						
		ME		28	29.0	1.8	+5				
		MN		28	13.9	2.3		+8			
		MZ		28	29.3	2.7			+5		
		FE		31	00.0						
		FN		30	40.0						
		FZ		31	20.0						
51	" 6	P	16	14	05.2				299		
		L		14	45.4						
		ME		15	11.4	3.1	+114				
		MN		14	39.8	2.4		-147			
		MZ		15	17.2	2.6			-56		
		FE		29	20.0						
		FN		29	30.0						
		FZ		25	20.0						
52	" 6	P	16	54	14.6				300		
		L		54	55.0						
		ME		56	22.5	3.0	+95				
		MN		56	24.7	2.5		-166			
		MZ		55	43.1	3.2			+64		
		FE	17	07	20.0						
		FN		07	10.0						
		FZ		03	40.0						
53	" 8	P	2	24	33.9				8350		
		L		34	11.4						
		MN		43	02.4	15.5	+525				

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No.	Date	Phase	G.M.T.			Period s	Amplitude			△ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
53	March 8	FN	3	18	30.0						
54	" 8	P	11	48	11.7				271		
		L		48	48.2						
		ME		49	19.2	1.2	-9				
		MN		49	11.2	1.2		+11			
		MZ		49	34.4	1.7			+4		
		FE		51	10.0						
		FN		51	40.0						
		FZ		55	20.0						
55	" 8	P	12	46	46.1				55	Felt slightly.	
		L		46	53.4						
		ME		46	56.5	1.6	-9				
		MN		46	53.4	1.6		+11			
		MZ		46	55.6	2.0			+4		
		FE		49	50.0						
		FN		50	00.0						
		FZ		48	50.0						
56	" 9	P	3	50	51.0				933		
		L		52	56.7						
		ME		54	18.8	5.0	-559				
		MN		54	20.5	3.7		+589			
		MZ		54	20.1	2.0			+128		
		FE	4	57	00.0						
		FN		56	10.0						
		FZ		56	00.0						
57	" 9	P	5	38	23.9				87		
		L		38	35.6						
		ME		38	35.6	0.9	-3				
		MN		38	35.6	0.9		-6			
		FE		40	10.0						
		FN		40	10.0						
58	" 9	P	7	20	22.5				289		
		L		21	01.5						
		ME		21	18.1	2.1	+2				
		MN		21	20.2	2.2		+11			
		FE		24	00.0						
		FN		23	50.0						
59	" 9	P	17	30	49.6				845		
		L		32	43.4						
		ME		33	20.5	3.4	+5				
		MN		33	28.2	2.1		+7			
		MZ		33	06.3	2.6			+4		
		FE		38	10.0						
		FN		38	20.0						
		FZ		37	00.0						
60	" 9	P	17	58	02.3				918		
		L	18	00	06.0						
		ME		00	35.8	2.1	-19				
		MN		00	50.8	2.3		+31			
		MZ		01	10.1	2.3			+11		
		FE		10	00.0						
		FN		09	50.0						
		FZ		08	20.0						
61	" 9	P	18	42	01.0				374		
		L		42	51.4						
		ME		43	12.4	2.0	-5				
		MN		43	18.3	2.0		+6			
		MZ		43	29.8	2.2			+3		
		FE		45	40.0						
		FN		45	20.0						
		FZ		44	50.0						



# OSAKA JAPAN

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory



No.	Date	Phase	G.M.T.			Period s	Amplitude			△ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
62	March 11	P	5	02	23.7				959		
		L		04	33.0						
		ME		05	09.0	2.3	-9				
		MN		04	59.2	2.3		+14			
		MZ		04	47.2	2.0		+6			
		FE		12	30.0						
		FN		12	10.0						
		FZ		10	30.0						
63	" 11	P	6	06	42.0				843		
		L		08	35.5						
		ME		09	40.2	3.4	+5				
		MN		09	24.6	3.5		+5			
		FE		15	50.0						
		FN		15	20.0						
64	" 11	P	12	29	54.4				1554		
		L		32	36.8						
		ME		34	01.7	5.1	+24				
		MN		33	14.5	4.1		+20			
		FE	13	05	50.0						
		FN		05	50.0						
		FZ		05	50.0						
65	" 12	P	5	06	58.7				398		
		L		07	52.4						
		ME		08	38.3	2.0	+6				
		MN		08	37.8	2.2		-6			
		MZ		08	10.3	1.8		+2			
		FE		10	30.0						
		FN		11	10.0						
		FZ		10	30.0						
66	" 12	P	10	40	42.2				2375		
		L		44	37.2						
		MN		48	24.5	18.9		-118			
		MZ		48	17.2	18.2		+11			
		FN	11	02	20.0						
		FZ		02	10.0						
67	" 12	P	19	11	46.0				996		
		S		14	00.3						
		L		16	16.0						
		MN		18	28.1	14.5		+50			
		FN		32	40.0						
68	" 12	P	21	<del>03</del> /01.1				2369			
		L		05	55.7						
		MN		08	05.2	11.0				+25	
		FN		20	00.0						
69	" 15	P	16	35	22.1				981		
		L		37	34.4						
		ME		38	47.8	3.9	+69				
		MN		38	35.8	3.7		-43			
		MZ		38	41.1	3.8		+24			
		FE		51	30.0						
		FN		51	50.0						
		FZ		49	30.0						
70	" 17	P	9	47	24.7				556		
		L		48	39.6						
		ME		49	47.1	2.0	-8				
		MN		49	16.2	1.8		+11			
		MZ		49	27.6	2.2		-6			
		FE		54	10.0						
		FN		54	40.0						
		FZ		54	10.0						

# OSAKA JAPAN

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory



International  
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No.	Date	Phase	G.M.T.			Period s	Amplitude			Δ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
71	March 18	P	8	29	32.3				16000		
		S		44	53.7						
		L	9	16	04.8						
		MN <sub>1</sub>		34	15.4	15.0		±45			
		MN <sub>2</sub>		49	44.8	13.6		±50			
		FN	10	56	10.0						
72	" 18	P	20	19	51.0				2469		
		L		23	53.9						
		ME		25	40.4	4.6	-34				
		MN		25	47.0	4.0		-45			
		MZ		27	01.2	4.0		-14			
		FE		44	40.0						
		FN		44	20.0						
		FZ		44	20.0						
73	" 19	P	3	07	35.9				245		
		L		08	08.9						
		ME		08	49.6	2.2	+3				
		MN		08	31.3	2.3		-5			
		MZ		08	37.6	2.6		-4			
		FE		10	30.0						
		FN		10	40.0						
		FZ		10	00.0						
74	" 19	P	6	29	50.2				2396		
		L		33	46.8						
		ME		35	19.2	5.1	-94				
		MN		35	01.7	3.9		-99			
		MZ		34	30.9	4.7		-40			
		FE		59	20.0						
		FN		59	20.0						
		FZ		55	00.0						
75	" 26	P	18	44	56.5				255		
		L		45	30.9						
		ME		46	31.7	3.3	-11				
		MN		46	41.1	2.9		-19			
		MZ		46	11.8	3.0		-6			
		FE		48	20.0						
		FN		50	00.0						
		FZ		48	30.0						
76	" 26	P	20	26	58.8				425		
		L		27	56.0						
		ME		28	19.3	2.3	+8				
		MN		28	20.1	2.6		+13			
		MZ		28	20.6	2.3		+11			
		FE		31	30.0						
		FN		31	40.0						
		FZ		30	30.0						
77	" 28	P	12	46	23.4				4420		
		L		52	34.4						
		ME		54	05.2	5.1	+63				
		MN		54	06.9	3.8		+39			
		MZ		56	38.8	4.0		-44			
		FE	13	14	50.0						
		FN		15	00.0						
		FZ		15	00.0						
78	" 29	P	17	54	17.2				381		
		L		55	08.6						
		ME		57	18.1	3.6	±41				
		MN		57	14.5	2.8		+75			
		MZ		57	24.4	3.8		+28			
		FE	18	09	40.0						
		FN		09	50.0						
		FZ		05	30.0						



# OSAKA JAPAN

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory



No.	Date	Phase	G.M.T.			Period s	Amplitude			△ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
88	April 18	P L ME MN F	12 20 20 20 22	20 36.7 37.8 4 7.1 20.0	25.6 36.7 37.8 7.1 20.0	0.4 0.6	-6 +5		82		
89	" 19	P L ME MN MZ F	2 35 37 37 30 51	33 28.8 05.3 04.8 06 59.1 40.0	35.9 28.8 05.3 04.8 59.1 40.0	5.3 3.9 4.1	+25 +24	+16	838		
90	" 20	P L ME MN MZ F	10 04 06 05 06 11	03 38.9 05.1 35.0 16.8 20.0	14.3 38.9 05.1 35.0 16.8 20.0	2.8 2.3 2.2	+6 +6	+4	628		
91	" 20	P L F	10 31 33	30 03.3 30.0	58.5 03.3 30.0				36		
92	" 21	P L ME MN MZ F	0 04 04 04 04 18	03 07.8 11.1 12.1 17.3 00.0	13.4 07.8 11.1 12.1 17.3 00.0	3.7 2.8 3.8	+100 +162	+86	404		
93	" 22	P L ME MN F	22 16 16 16 18	16 53.2 53.4 53.6 20.0	42.1 53.2 53.4 53.6 20.0	- }	-11 -6		82		
94	" 23	P L ME MN F	5 14 15 15 18	13 47.1 44.4 38.1 00.0	24.1 47.1 44.4 38.1 00.0	2.1 2.6	-4 +5		616		
95	" 24	P L ME MN MZ F	3 35 36 37 36 41	35 32.3 52.6 03.5 21.6 30.0	00.1 32.3 52.6 03.5 21.6 30.0	2.0 2.2 2.4	+12 -4	+6	240		
96	" 24	P L MN F	17 40 45 18	29 46.9 18.4 28 10.0	44.9 46.9 18.4 28 10.0	25.7	+130		10085		
97	" 26	P L F	4 32 43	27 13.9 50.0	42.6 13.9 50.0				2843		
98	" 26	P L ME MN F	12 35 35 36 38	35 41.9 51.9 04.5 00.0	02.2 41.9 51.9 04.5 00.0	1.4 1.4	-3 +2		295		

# OSAKA JAPAN

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory



No.	Date	Phase	G.M.T.			Period s	Amplitude			△ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
99	April 27	e.p	17	01	37.9					-	
		L		11	15.1						
		ME		12	19.3	3.9	-6				
		MN		12	13.5	3.5		+6			
		F		19	00.0						
100	" 30	P	4	39	45.5					43	
		L		39	51.3						
		ME		40	14.0	1.5	+6				
		MN		40	03.8	1.5		+6			
		F		42	00.0						
( T H E E N D )											

# OSAKA JAPAN

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory



$\phi = 34^{\circ} 39' N.$   $\lambda = 135^{\circ} 32' E.$  Gr.  $h = 3.4m$  Sub-Soil: Sandy Loam (Oldquaternary)

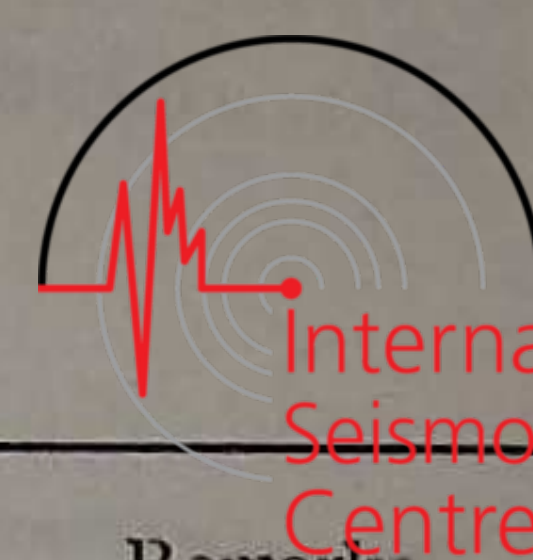
Instrument: Omori's Seismograph  
(Horizontal & Vertical)

Wiechert Seismograph  
(Horizontal & Vertical)

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
$A_E$ :	30	-	0.003	20
$A_N$ :	30	-	0.003	20
$A_Z$ :	15	-	0.004	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
$A_E$ :	4	3.2	0.003	80
$A_N$ :	4	3.2	0.003	80
$A_Z$ :	6	2.0	0.005	80

No.	Date	Phase	G.M.T.			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h.	m.	s.		$A_E$ $\mu$	$A_N$ $\mu$	$A_Z$ $\mu$		
101	May 3	P	8	05	49.8				110	Felt slightly	
		$\bar{P}$		05	52.5						
		L		06	04.6						
		ME		07	18.5	2.4	-114				
		MN		07	06.8	2.4		-126			
		MZ		06	36.6	1.7					-50
F		14	50.0								
102	" 11	P	18	27	59.9				685		
		L		29	19.4						
		ME		30	15.0	4.1	+31				
		MN		29	59.5	3.4		-38			
		MZ		29	49.7	3.0					+18
		F		37	20.0						
103	" 12	P	1	42	14.4				2658		
		L		46	31.9						
		ME		46	47.8	3.9	-26				
		MN		47	23.9	3.5		+28			
		MZ		47	29.1	3.8					+14
		F		55	10.0						
104	" 13	P	23	06	08.2				806		
		L		07	56.9						
		ME		10	59.7	3.8	-6				
		MN		10	23.6	3.8		-8			
		MZ		09	30.0	2.7					+5
		F		17	00.0						
105	" 14	P	23	24	57.1				999		
		L		27	11.7						
		ME		28	15.5	4.0	-12				
		MN		28	13.5	3.8		+14			
		MZ		28	03.8	4.0					-8
		F		36	00.0						
106	" 15	P	7	52	09.1				986		
		L		54	22.2						
		ME		55	48.7	4.0	-6				
		MN		55	30.3	4.0		+6			
		MZ		55	26.6	3.0					+4
		F		8	00	00.0					
107	" 18	P	8	40	36.4				106		
		L		40	50.7						
		ME		40	51.7	1.0	+3				
		MN		40	58.6	0.6		+2			
		F		42	20.0						
108	" 20	P	2	40	53.5				-		
		S		56	00.0						
		L	3	13	45.5						
		MN		27	54.5	19.0		+150			
		MZ		32	01.5	16.0					+19
		F	4	14	50.0						

**OSAKA JAPAN****SEISMOLOGICAL BULLETIN  
of the Osaka Meteorological Observatory**International  
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No.	Date	Phase	G.M.T.			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h.	m.	s.		$A_E$ $\mu$	$A_N$ $\mu$	$A_Z$ $\mu$		
109	May 24	P	0	18	38.5				944		
		L		20	45.7						
		ME		24	43.6	5.5	-8				
		MN		24	36.6	5.3		-13			
		F		36	00.0						
110	" 25	P	6	50	21.8				539		
		L		51	34.5						
		ME		52	28.5	3.4	-38				
		MN		52	34.9	3.6		-26			
		MZ		52	13.4	2.3		+14			
		F		58	300						
111	" 26	P	9	13	30.4				500		
		L		14	37.8						
		ME		15	40.3	4.2	-31				
		MN		16	28.6	4.0		+32			
		MZ		15	10.9	2.6		+13			
		F		22	00.0						
112	" 28	P	16	16	50.7				900		
		L		18	51.9						
		ME		19	14.8	3.2	-12				
		MN		19	14.0	3.8		-12			
		MZ		19	18.8	2.9		-8			
		F		24	50.0						
113	" 29	P	8	31	42.8				-		
		e.L		36	12.7						
		F		40	50.0						
114	" 30	P	16	55	28.8				45	Felt slightly	
		L		55	34.8						
		ME		55	35.0	0.4	-18				
		MN		55	41.8	0.4		-18			
		MZ		55	40.5	0.2		-8			
		F		59	00.0						

( T H E E N D )

# OSAKA JAPAN



International  
Seismological  
Centre

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory

$\varphi = 34^{\circ} 39' N.$   $\lambda = 135^{\circ} 32' E.$  Gr.  $h = 3.4m$  Sub-Soil: Sandy Loam (Oldquaternary)

Instrument: Omori's Seismograph  
(Horizontal & Vertical)

Wiechert Seismograph  
(Horizontal & Vertical)

$A_z$ : 15    -    0.004    20     $A_z$ : 6    2.0    0.005    80

No.	Date	Phase	G.M.T.			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h.	m.	s.		$A_E$ $\mu$	$A_N$ $\mu$	$A_z$ $\mu$		
115	June 2	P	2	38	33.5				272		
		L		39	10.1						
		ME		39	11.2	4.3	-578				
		MN		39	36.9	3.9		-547			
		MZ		39	18.9	6.0					-3300
		F		58	30.0						
116	2" 4	P	9	07	38.5				40		
		L		07	43.9						
		ME		07	44.1	0.4	-7				
		MN		07	44.3	0.4		+3			
		MZ		10	00.0						
		F									
117	" 4	P	9	57	40.2				4294		
		L	10	03	44.1						
		ME		04	41.9	4.9	+9				
		MN		05	10.3	4.8		+7			
		MZ		12	10.0						
		F									
118	" 6	P	5	20	59.7				40	Felt slightly	
		L		21	05.1						
		ME		21	06.1	0.4	+43				
		MN		21	06.3	0.4		+38			
		MZ		21	05.1	0.3		+11			
		F		24	30.0						
119	" 6	P	21	05	55.3				77		
		L		06	05.7						
		ME		06	06.2	1.1	+4				
		MN		06	04.3	1.1		-4			
		MZ		07	00.0						
		F									
120	" 9	P	5	09	01.6				462		
		L		10	03.8						
		ME		11	03.9	3.4	+181				
		MN		10	42.9	3.5		+269			
		MZ		11	09.5	3.4		+103			
		F		23	00.0						
121	" 11	P	6	16	53.2				330		
		L		17	38.2						
		ME		18	05.5	3.4	+600				
		MN		18	05.9	3.4		+523			
		MZ		18	01.8	2.1		+144			
		F		33	50.0						
122	" 12	P	1	46	52.1				514		
		L		48	01.2						
		ME		48	57.2	3.3	+33				
		MN		48	27.1	3.3		+64			
		MZ		52	40.0						
		F									
123	" 13	P	22	46	52.9				476		
		L		47	57.0						
		ME		48	49.2	3.0	+19				



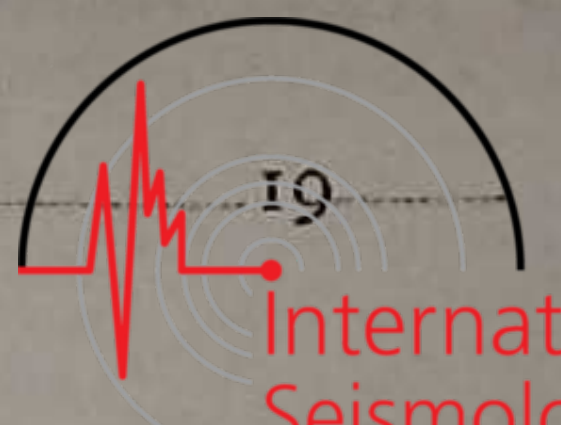


# OSAKA JAPAN

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory

No.	Date	Phase	G.M.T.			Period s	Amplitude			△ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
123	June 13	MN	48	15.0		3.3		+19			first motion S 0.31 W 1.88 U 1.25
		MN	11	53.5		4.0		-1250			
		MZ	12	12.3		2.2				-484	
		F	34	10.0							
125	" 17	P	17	09 56.8						4197	
		L	15	54.9							
		ME	16	52.9		4.2	+6				
		MN	16	52.5		4.4		+6			
		F	26	50.0							
126	" 19	P	19	42 36.2						62	
		L	42	44.5							
		ME	43	09.0		1.5	+6				
		MN	43	16.4		1.5		+6			
		MZ	42	45.8		0.4				+1	
		F	46	00.0							
127	" 23	Ø	6	16 14.2						570	
		L	17	30.8							
		ME	18	25.8		4.2	-870				
		MN	18	12.4		5.5		-883			
		MZ	18	31.5		2.7				-250	
		F	40	10.0							
128	" 27	P	18	08 39.1						1812	
		e.L	11	45.3							
		F	22	40.0							
129	" 29	P	6	21 31.2						4572	
		L	22	34.7							
		ME	23	20.5		2.6	+5				
		MN	23	11.6		2.6		+6			
		F	26	10.0							
130	" 29	P	8	23 50.2						342	
		L	24	36.3							
		ME	24	53.4		2.0	-6				
		MN	25	01.0		2.4		-11			
		F	28	20.0							
131	" 29	P	16	09 48.3						431	
		L	10	43.2							
		ME	11	01.3		2.4	+13				
		MN	11	21.3		3.2		-20			
		F	14	00.0							
132	" 29	P	16	44 07.1						281	
		L	44	44.9							
		ME	45	08.9		3.8	+218				
		MN	45	08.7		3.7		+453			
		F	17	00 300							

( T H E E N D )



# OSAKA JAPAN

## SEISMOLOGICAL BULLETIN

of the Osaka Meteorological Observatory

			48 36.2	2.4				19	
			52 40.0						
"	17	P	12 10 31.8						361
		L	11 20.4						
		ME	12 36.9	4.3	±1378				
		MN	11 53.5	4.0		-1250			
		MZ	12 12.3	2.2				-484	
		F	34 10.0						
									Felt slightly. first motion S 0.31 W 1.88 U 1.25
125	"	17	P	17 09 56.8					4197
			L	15 54.9					
			ME	16 52.9	4.2	+6			
			MN	16 52.5	4.4		+6		
			F	26 50.0					
126	"	19	P	19 42 36.2					62
			L	42 44.5					
			ME	43 09.0	1.5	+6			
			MN	43 16.4	1.5		+6		
			MZ	42 45.8	0.4			+1	
			F	46 00.0					
127	"	23	Ø	6 16 14.2					570
			L	17 30.8					
			ME	18 25.8	4.2	-870			
			MN	18 12.4	5.5		-883		
			MZ	18 31.5	2.7			-250	
			F	40 10.0					
128	"	27	P	18 08 39.1					1812
			e.L	11 45.3					
			F	22 40.0					
129	"	29	P	6 21 31.2					4872
			L	22 34.7					
			ME	23 20.5	2.6	+5			
			MN	23 11.6	2.6		+6		
			F	26 10.0					
130	"	29	P	8 23 50.2					342
			L	24 36.3					
			ME	24 53.4	2.0	-6			
			MN	25 01.0	2.4		-11		
			F	28 20.0					
131	"	29	P	16 09 48.3					431
			L	10 43.2					
			ME	11 01.3	2.4	+13			
			MN	11 21.3	3.2		-20		
			F	14 00.0					
132	"	29	P	16 44 07.1					281
			L	44 44.9					
			ME	45 08.9	3.8	+218			
			MN	45 08.7	3.7		+453		
			F	17 00 300					

( T H E E N D )

# OSAKA JAPAN

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory



$\phi = 34^{\circ} 39' N.$   $\lambda = 135^{\circ} 32' E.$  Gr. h = 3.4m Sub-Soil: Sandy Loam (Oldquaternary)

Instrument: Omori's Seismograph  
(Horizontal & Vertical)

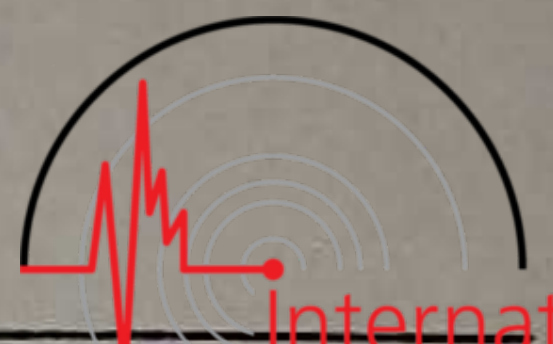
Wiechert Seismograph  
(Horizontal & Vertical)

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V		$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
$A_E$ :	30	-	0.003	20	$A_E$ :	4	3.2	0.003	80
$A_N$ :	30	-	0.003	20	$A_N$ :	4	3.2	0.003	80
$A_Z$ :	15	-	0.004	20	$A_Z$ :	6	2.0	0.005	80

No.	Date	Phase	G.M.T.			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h.	m.	s.		$A_E$ $\mu$	$A_N$ $\mu$	$A_Z$ $\mu$		
133	July 1st	P L ME MN F	5	53	27.6 54 16.2 54 45.1 54 53.0 57 20.0	2.4 3.4	-6	$\pm 6$	361		
134	" 1	e.P i L ME MN F	6	42	44.2 43 47.2 43 00.2 43 21.8 43 12.5 45 50.0	1.6 1.6	+11	-11	119		
135	" 2	P L E	3	41	38.5 45 08.7 52 20.0				2082		
136	" 4	P i i L ME MN F	16	02	33.8 02 36.3 02 38.5 02 43.8 03 19.9 03 19.7 13 30.0	4.2 4.0	$\pm 88$	-57	74		
137	" 7	P L ME MN F	5	41	41.4 41 50.0 42 07.4 42 13.8 44 00.0	1.0 0.6	-5	$\pm 4$	64		
138	" 7	P L ME MN F	20	47	22.2 47 58.8 48 20.8 48 37.0 51 20.0	1.8 2.0	-8	$\pm 8$	272		
139	" 8	P i L ME MN F	9	44	56.2 45 02.2 45 20.2 45 32.8 45 30.8 50.00.0	2.0 2.2	+13	-13	178		
140	" 8	P i L ME MN F	10	25	48.3 25 54.3 26 16.3 26 24.3 26 32.2 30 00.0	1.6 2.0	+8	+6	208		
141	" 10	P L ME MN F	134	43.0	35 13.0 34 5 28.0 35 28.0 37 20.0	2.0 2.0	-8	+5	223		
142	" 10	P	6	00	14.4				383		

**OSAKA JAPAN****SEISMOLOGICAL BULLETIN**  
of the Osaka Meteorological Observatory

No.	Date	Phase	G.M.T.			Period s	Amplitude			△ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
142	July 10	P	6	00	14.4				383		
		L		01	06.0						
		ME		02	02.4	2.4	+14				
		MN		01	44.4	3.0		+19			
		F		07	40.0						
143	" Lo	P	13	11	31.1				448		
		i		11	41.3						
		L		12	31.4						
		ME		13	19.0	2.4	+78				
		MN		13	23.7	3.6		+93			
		F		25	30.0						
144	" 10	P	19	17	46.5				44		
		i		17	48.2						
		L		17	52.4						
		ME		19	02.1	2.2	-44				
		MN		18	56.4	2.4		-31			
		F		26	40.0						
145	" 12	P	16	50	51.1				2979		
		L		55	32.7						
		ME		57	10.4	5.6	-31				
		MN		56	10.4	5.0		+38			
		F		17	09 10.0						
146	" 13	P	14	59	17.2				51		
		L		59	24.1						
		ME		59	24.1	0.2	+1				
		MN		59	24.1	0.2		-3			
		F		15	01 50.0						
147	" 15	P	10	27	20.8				39		
		i		27	22.8						
		L		27	26.1						
		ME		27	26.1	0.3	-6				
		MN		27	26.3	0.3		+5			
		F		30	40.0						
148	" 15	P	16	32	38.8				2762		
		L		37	04.0						
		ME		38	21.0	5.1	+4				
		MN		38	52.0	4.3		+4			
		F		51	00.0						
149	" 18	P	11	29	18.0				2834		
		L		33	48.6						
		ME		34	13.8	4.4	+16				
		MN		34	42.2	4.3		-19			
		F		46	40.0						
150	" 19	P	9	45	17.2				521		
		L		46	27.5						
		ME		48	13.4	3.6	+16				
		MN		48	09.5	3.9		-13			
		F		53	10.0						
151	" 19	P	12	24	37.5				530		
		L		25	48.9						
		ME		26	45.4	4.4	+14				
		MN		26	27.1	3.8		-30			
		F		34	50.0						
152	" 21	P	3	46	34.4				7222		
		L		55	15.0						
		ME		56	47.9	4.8	+11				
		MN		56	37.3	5.4		-18			
		F		4	03 50.0						

**OSAKA JAPAN****SEISMOLOGICAL BULLETIN  
of the Osaka Meteorological Observatory**International  
Seismological  
Centre

No.	Date	Phase	G.M.T.			Period s	Amplitude			△ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
53	July 22	P	6	07	22.8				267		
		L		07	37.4						
		ME		08	33.4	3.6	+11				
		MN		08	25.4	3.6		+19			
		F		12	30.0						
54	" 23	P	14	28	39.4				4532		
		L		34	56.0						
		ME		58	57.9	4.0	±25				
		MN		38	44.0	4.2		±25			
		F		44	50.0						
55	" 26	P	1	41	58.7				492		
		L		43	05.0						
		ME		43	40.0	2.1	-31				
		MN		43	41.7	3.2		+31			
		F		47	00.0						
56	" 28	P	2	06	32.9				209		
		i		06	45.2						
		L		07	01.1						
		ME		07	57.1	2.4	-26				
		MN		08	20.5	2.8		+26			
		F		13	50.0						
57	" 30	P	15	16	26.8				137		
		L		16	45.2						
		ME		17	12.7	1.7	-13				
		MN		17	16.9	1.5		-11			
		MZ		17	12.2	1.3			+35		
		F		20	00.0						
58	" 30	P 1	19	<del>19</del>	23.0				499		
		L		48	30.2						
		ME		48	52.1	2.4	±8				
		MN		48	53.7	2.0		+6			
		MZ		48	39.2	2.5			+6		
		F		55	10.0						

( T H E E N D )

0.63

# OSAKA JAPAN

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory



$\phi = 34^{\circ} 39' N.$   $\lambda = 135^{\circ} 32' E.$  Gr.  $h = 3.4m$  Sub-Soil: Sandy Loam (Oldquaternary)

Instrument: Omori's Seismograph  
(Horizontal & Vertical)

Wiechert Seismograph  
(Horizontal & Vertical)

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
$A_E$ :	30	—	0.003	20
$A_N$ :	30	—	0.003	20
$A_Z$ :	15	—	0.004	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
$A_E$ :	4	3.2	0.003	80
$A_N$ :	4	3.2	0.003	80
$A_Z$ :	4	2.0	0.005	80

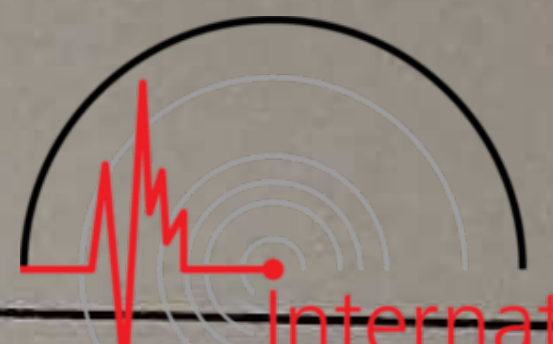
No.	Date	Phase	G.M.T.			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h.	m.	s.		$A_E$ $\mu$	$A_N$ $\mu$	$A_Z$ $\mu$		
159	Aug. 2	P L ME MN MZ F	20	14	26.2 17 49.9 18 40.8 18 40.9 18 10.1 30 40.0	4.3 4.9 3.3	+6 $\pm 6$	$\pm 2$	2007		
160	" 2	P L ME MN MZ F	22	07	38.4 08 30.2 09 11.5 09 15.3 09 027 14 40.0	2.7 2.7 2.6	+6 $\pm 6$	-4	384		
161	" 2	P L ME MN F	23	33	54.2 37 17.3 39 16.4 39 41.7 50 10.0	4.7 4.3	-7 $\pm 8$		2001		
162	" 5	P i L ME MN F	1	29	26.8 30 24.2 34 06.6 35 53.6 36 01 6 49 20.0	5.9 5.5	$\pm 14$ $\pm 13$		2957		
163	" 6	P S L ME MN F	18	21	17.2 27 14.2 30 12.3 34 25.1 33 24.8 47 30.0	3.9 4.2	$\pm 9$ -13		4175		
164	2" 7	P S L F	2	18	26.4 24 58.0 30 20.7 3 11 40.0				4807		
165	" 7	P L ME MN MZ F	23	35	02.4 35 28.4 35 43.1 35 38.7 36 01.4 37 50.0	4.0 4.0 2.6	$\pm 16$ -18	$\pm 6$	193		
166	" 8	P L ME MN MZ F	17	01	39.0 02 31.0 02 33.4 02 44.2 02 42.5 10 40.0	3.0 3.0 3.2	+50 $\pm 36$	$\pm 16$	386		
167	2" 10	P i L	14	34	37.8 34 43.8 35 11.8				252	Felt slightly at Osaka.	

# OSAKA JAPAN

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory



No.	Date	Phase	G.M.T.			Period s	Amplitude			△ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
167	Aug. 10	ME MN MZ F	14	35	33.8 31.9 37.8 22 0	2.0 2.0 2.0	+500	+500	-237		
168	✓ 10	P S L ME MN MZ F	21	25	43.1 12 2 34.3 25.4 18.3 50.2 10.0	10.1 12.8 10.9	-485	+451	+269	2812	
169	" 13	P S L ME MN F	22	21	12.8 50.4 55.2 14.4 53.3 20.0	4.6 4.6	±5	±3		3834	
170	" 14	P L ME MN F	2	11	14.1 20.9 20.9 20.9 40.0	0.3 0.3	-3	-1		50	
171	" 14	P L ME MN F	16	20	07.4 173 21.2 49.3 40.0	3.9 4.4	±2	±3		964	
172	" 15	P L ME MN MZ F	12	45	55.4 40.7 01.3 57.9 16.4 10.0	3.9 4.1 3.3	-19	-20	-11	781	
173	" 16	P L ME MN MZ F	16	54	37.2 45.9 46.1 47.5 45.9 50.0	0.3 0.3 0.2	+13	-6	+2	65	Felt slightly at Osaka.
174	" 17	P L Me MN MZ F	17	51	06.2 27.8 40.2 09.6 57.2 30.0	3.9 4.1 3.9	-22	-30	±6	1336	
175	" 18	P L ME MN MZ F	5	41	33.1 40.9 41.9 25.0 05.1 50.0	5.6 3.9 2.3	-125	-126	+50	504	
176	✓ 18	P S L ME MN F	14	27	58.7 59.1 18.8 11.7 02.2 20.0	6.8 5.8	-36	-75		4233	

**OSAKA JAPAN****SEISMOLOGICAL BULLETIN  
of the Osaka Meteorological Observatory**International  
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Centre

No.	Date	Phase	G.M.T.			Period s	Amplitude			△ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
177	" 19	P	1	28	22.6				197		
		L		28	49.1						
		ME		30	00.7	3.1	+47				
		MN		29	43.6	3.6		+44			
		MZ		29	28.3	2.7					+19
		F		37	10.0						
178	" 20	P	0	07	11.3				1549		
		L		09	53.2						
		ME		11	18.7	2.6	±8				
		MN		11	17.3	4.0		±8			
		MZ		11	23.0	3.1					-4
		F		17	40.0						
179	" 20	P	6	32	00.9				237		
		L		32	32.8						
		ME		32	34.8	0.8	±3				
		MN		32	34.8	0.6		+5			
		F		35	00.0						
180	" 20	P	8	50	33.5				68	Felt slightly at Osaka.	
		i		50	34.6						
		L		50	42.6						
		ME		50	44.6	0.3	±19				
		MN		50	46.8	0.3		-13			
		MZ		50	43.0	0.2					+5
F		54	40.0								
181	" 21	P	19	22	16.2				1426		
		L		24	45.8						
		ME		25	38.6	3.9	+6				
		MN		26	07.3	4.5		+9			
		F		30	50.0						
182	" 24	P	19	57	54.4				223		
		L		58	24.4						
		ME		58	39.1	1.9	-6				
		MN		58	35.7	1.9		+7			
		F		20	00.0						
183	" 24	P	21	44	35.6				7018		
		S		53	05.8						
		L		22	07.24.5						
		F		30	20.0						
184	" 27	P	15	37	09.3				6348		
		S		45	04.2						
		L		58	44.4						
		ME	16	03	08.2	17.8	+19				
		MN		02	16.6	16.8		±31			
		MZ		08	54.0	13.3					+13
F		58	40.0								
185	" 30	P	15	28	07.9				28		
		L		28	11.7						
		ME		28	11.7	0.4	+8				
		MN		28	16.1	0.4		+4			
		MZ		28	15.1	0.4					+2
		F		34	15.0						
186	" 31	P	3	51	57.4				387		
		L		52	49.5						
		ME		53	12.3	3.0	±5				
		MN		53	28.7	2.3		+6			



**OSAKA JAPAN****SEISMOLOGICAL BULLETIN**  
of the Osaka Meteorological ObservatoryInternational  
Seismological  
Centre

No.	Date	Phase	G.M.T.			Period s	Amplitude			△ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
187	Aug. 31 ✓	MZ	3	53	07.5	2.0			+5	2513	
		F	4	00	10.0						
		P	6	39	54.3						
		L		44	00.5						
		ME		45	29.7	4.1	-7				
		MN		44	57.5	5.2		+11			
		MZ		44	31.8	3.6			+6		
		F		55	00.0						
					(	THE	End	)			

# OSAKA JAPAN

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory



$\phi = 34^{\circ} 39' N.$   $\lambda = 135^{\circ} 32' E.$  Gr.  $h = 3.4m$  Sub-Soil: Sandy Loam (Oldquaternary)

Instrument: Omori's Seismograph  
(Horizontal & Vertical)

Wiechert Seismograph  
(Horizontal & Vertical)

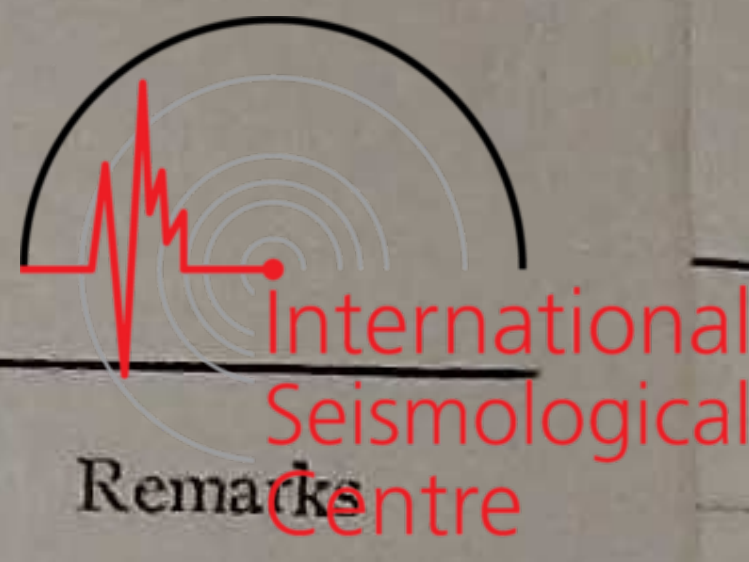
	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
$A_E$ :	30	$\frac{1}{2}$	0.003	20
$A_N$ :	30	—	0.005	20
$A_z$ :	15	—	0.004	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
$A_E$ :	4	3.2	0.003	80
$A_N$ :	4	3.2	0.003	80
$A_z$ :	6	2.0	0.005	80

No.	Date	Phase	G.M.T.			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h.	m.	s.		$A_E$ $\mu$	$A_N$ $\mu$	$A_z$ $\mu$		
188	Sept. 2	P L ME MN MZ F	5	31	53.1 53.6 33.2 29.9 31.5 00.0	3.7 3.5 2.1	-8	-8	-5	440	
189	" 1	P L ME MN MZ F	13	38	58.7 56.3 30.7 37.3 50.9 00.0	3.0 2.6 2.6	-6	-6	-5	873	
190	" 6	P L ME MN F	5	21	19.8 38.0 55.7 50.6 40.0	1.6 1.0	+3	+3		135	
191	" 6	P i L ME MN MZ F	20	35	51.0 173 53.9 15.2 23.9 51.9 30.0	2.1 2.5 1.8	+14	-14	+4	467	
192	" 7	P L ME MN MZ F	17	14	13.5 31.5 51.2 59.1 57.1 10.0	2.0 1.6 1.5	+14	+13	+6	134	
193	" 8	P i L ME MN MZ F	19	10	21.4 18.9 35.7 37.8 33.3 26.0 10.0	3.9 4.0 2.5	-293	-322	+95	551	
194	" 9	P L ME MN MZ F	20	42	24.6 25.2 24.5 33.4 43.3 03 10.0	5.4 4.8 4.9	-100	+128	+25	1754	
195	" 13	P L ME MN MZ F	16	00	33.0 48.4 49.0 48.6 52.0	0.6 0.6 0.3	+5	+5	-1	114	

# OSAKA JAPAN

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory



No.	Date	Phase	G.M.T.			Period s	Amplitude			Δ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
196	Sept. 15	P	9	22	33.6				57		
		L	22	42.2							
		ME	22	41.3	0.3	+4					
		MN	22	41.4	0.3		+5				
		F	24	00.0							
197	" 16	P	12	43	54.3				332	Felt slightly at Osaka.	
		L	44	38.9							
		ME	45	37.5	4.4	+960					
		MN	45	07.4	3.6		-880				
		MZ	45	04.3	2.8			+458			
		F	13	05	00.0						
198	" 16	P	14	28	04.0				321		
		L	28	47.3							
		ME	29	13.5	2.6	+6					
		MN	29	11.3	2.4		-8				
		F	31	10.0							
199	" 16	P	19	13	27.2				66	Felt slightly at Osaka.	
		L	13	33.1							
		ME	13	30.4	1.0	+131					
		MN	13	33.4	1.1		+159				
		MZ	13	33.4	1.0			-50			
		F	23	30.0							
200	" 18	P	6	14	18.2				339		
		L	15	03.8							
		ME	15	29.8	3.0	+105					
		MN	16	31.6	3.0		-131				
		MZ	16	22.6	2.2			+25			
		F	22	30.0							
201	" 18	P	13	26	12.5				53		
		L	26	19.6							
		ME	26	24.1	0.4	+4					
		MN	26	21.3	0.4		-4				
		MZ	26	30.1	0.3			+1			
		F	30	30.0							
202	" 19	P	7	46	18.2				3124		
		L	51	10.1							
		F	8	01	30.0						
203	" 20	P	15	15	20.9				425		
		L	16	18.2							
		ME	17	04.7	2.4	-6					
		MN	17	15.9	2.3		-6				
		MZ	16	59.3	2.5			+2			
		F	24	20.0							
204	" 20	P	22	43	41.9				236		
		L	44	13.7							
		ME	44	45.6	2.0	-3					
		MN	44	59.0	1.8		-3				
		MZ	45	01.1	2.5			+2			
		F	50	00.0							
205	" 21	P	2	20	54.6				373	Felt slightly at Osaka.	
		L	31	44.8							
		ME	22	24.5	5.5	-4808					
		MN	22	13.6	5.3		+4224				
		MZ	22	09.5	2.9			+1583			
		F	3	11	30.0						
206	" 21	e.P	2	43	22.0				360		
		L	44	10.5							

N...1.3  
E...2.2  
D...0.5

**OSAKA JAPAN****SEISMOLOGICAL BULLETIN  
of the Osaka Meteorological Observatory**

No.	Date	Phase	G.M.T.			Period s	Amplitude			Δ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
207	Sept. 21	F	2	46	00.0				366		
		P	2	46	42.2						
		L	47	31.5							
		ME	47	59.4	1.8	+9					
		MN	47	42.3	1.8		+5				
		MZ	48	00.6	1.7			-5			
F	50	20.0									
208	" 21	P	3	11	54.7				384		
		L	12	26.5							
		ME	13	05.4	1.7	+8					
		MN	13	05.3	1.7		+8				
		MZ	12	55.4	1.4			-7			
		F	19	10.0							
209	" 21	P	3	26	03.2				355		
		L	26	51.0							
		ME	27	21.5	1.7	+3					
		MN	27	10.2	1.5		+5				
		F	31	40.0							
210	" 21	P	3	55	49.4				373		
		L	56	39.6							
		ME	56	56.6	1.6	-4					
		MN	56	46.3	2.0		-3				
		F	4	00	10.0						
211	" 21	P	6	22	25.3				344		
		i	22	55.4							
		L	23	11.7							
		ME	23	38.6	2.0	+13					
		MN	23	39.7	2.3		+13				
		F	30	10.0							
212	" 21	P	6	49	57.3				366		
		i	50	20.4							
		L	50	46.6							
		ME	51	17.9	1.9	+19					
		MN	51	00.7	1.9		+20				
		MZ	51	19.2	1.9			+6			
F	59	20.0									
213	" 21	P	7	08	23.9				343		
		L	09	10.2							
		ME	09	19.0	2.4	+6					
		MN	09	33.9	2.3		-7				
		F	12	40.0							
214	" 21	P	7	46	00.5				212		
		L	46	29.0							
		ME	46	29.0	1.6	-5					
		MN	46	29.8	1.9		-5				
		F	50	20.0							
215	" 21	P	9	29	46.7				418		
		L	30	42.09							
		ME	31	12.6	1.7	+6					
		MN	31	13.6	1.9		+5				
		F	35	20.0							
216	" 21	eP	9	48	37.0				362		
		eL	49	25.8							
		F	51	00.0							
217	" 21	P	9	51	21.5				318		

# OSAKA JAPAN

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory



International  
Seismological  
Centre

No.	Date	Phase	G.M.T.			Period s	Amplitude			Δ k.m.	Remarks											
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ													
		L	9	52	04.5																	
		ME		52	37.2						1.9	-9										
		MN		52	36.3						1.7		+7									
		F		55	40.0																	
218	Sept. 21	eP	10	25	02.7					266												
		L		25	38.3						2.2	+5										
		ME		26	05.3									1.3		-3						
		MN		25	45.4																	
F		26	10.0																			
219	" 21	P	10	32	41.3					2815												
		S		37	10.5						4.0											
		L		41	40.5									-59								
		ME		42	54.5												+39					
		MN		44	15.9																	
		F		11	09															10.0		
220	" 21	eP	15	31	23.0					334												
		L		32	18.8						1.5	-2										
		ME		32	39.7									-3								
		MN		32	45.7																	
F		34	50.0																			
221	" 21	P	13	46	41.9					3482												
		S		51	57.7						5.5	+3										
		L		57	00.2									5.5		+3						
		ME		58	15.8																	
		MN		58	15.4																	
		F		14	05												50.0					
222	" 21	eP	17	52	21.7					339												
		L		53	07.3						2.0	-5										
		ME		53	44.4									2.0		-6						
		MN		53	36.8																	
F		56	20.0																			
223	" 21	P	18	08	15.1					320												
		L		08	58.2						2.0	-2										
		ME		09	22.7									2.4		+5						
		MN		09	21.7																	
		F		11	30.0																	
224	" 21	P	16	24	09.6					380												
		L		25	00.9						2.0	+1										
		ME		25	26.9									1.8		+2						
		MN		25	26.9																	
		F		27	40.0																	
225	" 22	P	8	37	59.7					357												
		L		38	27.8						2.0	+6										
		ME		39	03.7									2.0		+5						
		MN		59	09.7																	
		F		50	10.0																	
226	" 23	P	12	47	07.9					353												
		L		47	55.1						1.8	+6										
		ME		48	19.3									1.4		+7						
		MN		48	12.2												1.2		-4			
		MZ		48	10.5																	
		F		52	00.0																	
227	" 23	P	16	23	33.9					374												
		i		23	52.5						1.5	+11										
		L		24	24.5																	
		ME		24	41.6																	

**OSAKA JAPAN****SEISMOLOGICAL BULLETIN  
of the Osaka Meteorological Observatory**

No.	Date	Phase	G.M.T.			Period s	Amplitude			△ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
		MN	16	24	42.6	1.5					
		MZ		24	38.9	1.5		+13			
		F		34	20.0				-4		
228	Sept. 24	P	4	27	23.7					418	
		L		28	19.9						
		ME		29	02.3	2.5	-8				
		MN		28	37.1	2.4		-9			
		F		33	30.0						
229	" 24	P	12	11	17.5					360	
		L		12	06.0						
		ME		12	26.5	1.8	±6				
		MN		12	19.7	2.0		-8			
		F		15	20.0						
230	" 25	P	6	08	49.4					6444	
		S		16	49.6						
		L		25	45.6						
		ME		34	42.5	17.1	-23				
		MN		38	59.8	21.8		+36			
		MZ		34	53.6	11.3			±6		
		F		55	00.0						
231	" 27	P	19	51	55.5					362	
		L		52	24.3						
		ME		52	38.7	2.0	-24				
		MN		52	53.9	2.1		-41			
		MZ		53	14.3	2.0			+13		
		F		20	00	20.0					
232	" 28	P	4	55	10.0					380	
		L		56	01.2						
		ME		56	26.9	2.2	+88				
		MN		56	27.3	3.0		-147			
		MZ		57	02.6	2.5			±41		
		F		5	04	00.0					
233	" 29	P	5	18	47.2					1640	
		L		21	37.2						
		ME		24	30.4	5.9	+13				
		MN		23	57.8	3.8		+8			
		F		31	50.0						

( END )



# OSAKA JAPAN

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory

$\phi = 34^\circ 39' N.$   $\lambda = 135^\circ 32' E.$  Gr.  $h = 3.4m$  Sub-Soil: Sandy Loam (Oldquaternary)

Instrument: Omori's Seismograph  
(Horizontal & Vertical)

Wiechert Seismograph  
(Horizontal & Vertical)



	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
$A_E$ :	30	-	0.003	20
$A_N$ :	30	-	0.003	20
$A_z$ :	15	-	0.004	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
$A_E$ :	4	3.2	0.003	80
$A_N$ :	4	3.2	0.003	80
$A_z$ :	6	2.0	0.005	80

No.	Date	Phase	G.M.T.			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h.	m.	s.		$A_E$ $\mu$	$A_N$ $\mu$	$A_z$ $\mu$		
234	Oct. 2	P i L ME MN MZ F	17	37	39.5 49.4 29.7 04.6 57.0 58.8 30.0	3.0 3.2 1.9	-134	-156	-36	373	
235	" 3	P S L ME MN MZ F	19	22	21.3 03.7 37.3 39.5 22.9 36.7 0.0	15.5 15.2 19.3	-106	+100	-20	6111	
236	" 3	P S L ME MN F	21	27	34.8 37.3 39.3 36.8 43.2 30.0	18.1 16.2	$\pm 2$	-2		5370	
237	" 3	P S L ME MN	22	05	01.2 51.4 53.3 26.1 54.0	21.2 20.0	+10	+12		5149	
238	" 3	P S L ME MN MZ F	22	56	48.6 11.8 35.9 55.3 32.8 48.3 30.0	20.3 20.5 19.0	$\pm 33$	$\pm 39$	$\pm 38$	5754	
239	" 4	e.P S F	0	57	00.4 55.2 0.0					-	
240	" 5	e.P S F	7	16	29.4 17.7 0.0					-	
241	" 5	P L ME MN MZ F	12	55	37.1 56.8 52.1 55.0 12.7 30.0	2.5 2.1 2.2	$\pm 7$	$\pm 8$	$\pm 5$	586	
242	" 5	P L	22	40	21.6 45.7					6902	

# OSAKA JAPAN

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory



No.	Date	Phase	G.M.T.			Period s	Amplitude			△ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
243	Oct. 10	F	23	00	40.0				5490		
		P	0	28	59.3						
		S	36	08.3							
		L	42	06.8							
		ME	47	46.0	17.9	-49					
		MN	48	02.1	16.2		-74				
MZ	48	02.1	19.3			±44					
244	" 10	P	1	17	01.2				5646		
		S	24	18.5							
		L	29	44.1							
		ME	32	57.4	21.7	±12					
		MN	34	53.3	19.4		+10				
245	" 10	P	1	33	33.1				5486		
		S	40	41.9							
		L	48	46.7							
		ME	55	42.4	22.9	+33					
		MN	57	24.7	19.2		-30				
246	" 10	e.P	2	26	01.6				-		
		e.S	31	36.4							
		ME	41	11.8	19.0	±3					
247	" 10	e.P	3	12	24.1				-		
		e.S	19	09.5							
		ME	22	19.6	16.7	±5					
		F	48	30.0							
248	" 10	P	16	42	47.6				4295		
		L	48	51.6							
		ME	52	04.6	17.1	+45					
		F	17	17	20.0						
249	" 16	P	6	43	45.6				595		
		L	45	05.7							
		F	56	0.0							
250	" 17	P	15	36	20.6				1718		
		L	39	18.4							
		ME	39	25.5	2.8	+9					
		MN	39	42.7	3.0		-13				
		F	48	10.0							
251	" 18	P	4	41	21.2				3078		
		S	46	09.8							
		L	50	18.2							
		ME	50	39.1	4.9	±13					
		MN	51	06.2			±13				
		F	59	0.0							
252	" 21	P	7	43	25.3				280		
		L	44	02.9							
		ME	44	22.7	2.2	-13					
		MN	44	23.8	2.3		-18				
		F	48	20.0							
253	" 23	P	3	17	18.4				396		
		L	18	11.8							
		ME	18	34.2	2.6	-5					
		MN	18	34.2	2.6		-8				
		F	22	0.0							
254	" 23	P	20	14	41.2				1496		
		L	17	17.8							



**OSAKA JAPAN****SEISMOLOGICAL BULLETIN**  
of the Osaka Meteorological Observatory

No.	Date	Phase	G.M.T.			Period s	Amplitude			△ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
		ME	20	18	51.0	3.8	±5				
		MN	19	29.0		3.6		±5			
		F	25	30.0							
255	Oct. 23	P	23	28	53.9					136	
		L	29	12.1							
		ME	29	57.4	1.2	-13					
		MN	29	58.2	1.4			-9			
		MZ	29	12.1	0.8				-8		
		F	41	30.0							
256	" 25	P	13	46	53.1					778	
		L	48	37.9							
		ME	49	14.3	2.4	+6					
		MN	49	22.1	2.4			+6			
		F	54	30.0							
257	" 28	P	5	39	55.2					2356	
		L	5	43	48.8						
		ME	44	34.6	4.0	±18					
		MN	44	31.8	4.0			+14			
		F	55	40.0							
258	" 29	P	8	42	50.8					2164	
		L	46	28.2							
		ME	46	47.6	3.6	-13					
		MN	46	58.1	3.9			-4			
		F	9	00	10.0						
259	" 29	P	18	54	26.3					552	
		L	55	40.7							
		ME	56	29.0	3.6	-34					
		MN	56	07.0	3.6			-44			
		MZ	56	30.6	2.5				±12		
		F	19	06	20.0						
260	" 30	P	8	43	45.1					225	
		L	44	15.4							
		ME	44	21.5	1.4	+13					
		MN	44	20.9	1.4			+11			
		F	59	0.0							
261	" 31	P	10	09	51.5					2690	
		S	14	11.5							
		L	19	04.1							
		F	38	50.0							
262	" 31	P	14	18	03.0					502	
		L	19	10.7							
		ME	19	16.5	2.6	-3					
		MN	19	16.1	3.0			+5			
		F	25	30.0							

( THE END )

# OSAKA JAPAN

November 1931

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory



$\varphi = 34^{\circ} 39' N.$   $\lambda = 135^{\circ} 32' E.$  Gr.  $h = 3.4m$

Sub-Soil: Sandy Loam (Oldquaternary)

Instrument: Omori's Seismograph  
(Horizontal & Vertical)

Wiechert Seismograph  
(Horizontal & Vertical)

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
$A_E$ :	30	—	0.003	20
$A_N$ :	30	—	0.003	20
$A_z$ :	15		0.004	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
$A_E$ :	4	3.2	0.003	80
$A_N$ :	4	3.2	0.003	80
$A_z$ :	6	2.0	0.005	80

No.	Date	Phase	G.M.T.			Period s	Amplitude			$\Delta$ k.m.	Remarks						
			h.	m.	s.		$A_E$ $\mu$	$A_N$ $\mu$	$A_z$ $\mu$								
263	Nov. 1	P	18	54	15.8	3.7 3.6 3.3	+303	-238	+97	399							
		i		54	44.1												
		L		55	09.6												
		i		55	30.1												
		Me		56	23.5												
		MN		56	24.8												
		MZ		56	03.1												
F	19	23	50.0														
264	" 2	P	10	03	59.0	4.0 4.8 2.9	+5175	+3800	+2400	450	Felt at Osaka slightly.						
		i		04	01.7												
		i		04	06.9												
		i		04	08.6												
		i		04	22.5												
		i		04	33.3												
		L		04	59.6												
		i		05	15.1												
		ME		07	29.8												
		MN		07	17.6												
MZ		06	31.9														
F	11	01	10.0														
265	" 2	P	10	32	58.6	3.4 3.2	-9	±11		418							
		L		33	54.9												
		ME		34	05.2												
		MN		34	10.0												
		F		39	40.0												
266	" 2	P	11	01	38.4	3.2 3.5 2.6	+476	+408	+163	413							
		i		01	53.1												
		i		02	29.2												
		L		02	34.0												
		i		02	37.3												
		ME		03	56.1												
		MN		03	43.2												
		MZ		04	53.1												
F	-	-	-														
267	" 2	P	11	25	25.2	1.7 1.9 1.7	+11	+16	+4	421							
		L		26	21.8												
		ME		26	52.8												
		MN		26	59.0												
		MZ		27	26.0												
		F		34	10.0												
268	" 2	P	11	34	23.1	3.2 3.4 1.8	-26	-19	-5	404							
		i		34	41.1												
		L		35	17.5												
		i		35	26.3												
		ME		36	01.5												
		MN		36	17.5												
		MZ		35	58.7												
		F		48	20.0												

# OSAKA JAPAN

November 1931

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory



No.	Date	Phase	G.M.T.			Period s	Amplitude			Δ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
269	Nov.	2	P	11	48	16.9	2.6	+119	+110	-47	430
			i		48	41.7					
			L		49	14.8					
			ME		50	11.5					
			MN		50	52.5					
			MZ		50	07.9					
F	12	12	0.0	2.2							
270	"	2	P	12	12	09.5	3.1	+13	+13	±4	425
			L		13	06.7					
			ME		13	35.1					
			MN		13	35.2					
			MZ		13	46.9					
			F	19	10.0	1.8					
271	"	2	Ø	13	47	21.7					-
			F		55	30.0					
272	"	2	P	15	17	16.8	2.5	+6	±8		507
			L		18	25.1					
			ME		18	50.5					
			MN		19	19.5					
			F	26	0.0	2.6					
273	"	2	P	15	50	15.9	3.2	±6	±6		417
			L		51	12.0					
			ME		51	48.5					
			MN		51	56.5					
			F	57	40.0	2.4					
274	"	2	P	17	10	55.1					4633
			S		17	17.3					
			L		20	47.3					
			F		36	30.0					
275	"	2	P	19	35	59.5					425
			i		36	21.1					
			L		36	56.8					
			F		42	0.0					
276	"	2	P	19	56	31.8	2.5	+19	+26	+14	253
			L		57	05.9					
			ME		57	49.3					
			MN		57	43.4					
			MZ		57	47.9					
			F	20	06	40.0					
277	"	3	P	2	40	39.6	4.8	±11	±8		2284
			L		44	27.0					
			ME		47	23.5					
			MN		46	39.9					
			F	3	00	50.0					
278	"	3	P	4	36	36.0	0.4	+5	-5		208
			L		37	04.0					
			ME		37	05.6					
			MN		37	05.9					
			F	39	10.0	0.6					
279	"	3	e.P	15	26	14.8					-
			e.L		27	14.8					
			F		31	30.0					
280	"	3	P	16	21	43.6	4.5	-88			774
			L		23	27.9					
			ME1		24	06.4					

No. 77

From \_\_\_\_\_ to \_\_\_\_\_ 19\_\_

**OSAKA JAPAN**

November 1931

**SEISMOLOGICAL BULLETIN  
of the Osaka Meteorological Observatory**

No.	Date	Phase	G.M.T.			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h.	m.	s.		$A_E$ $\mu$	$A_N$ $\mu$	$A_Z$ $\mu$		
281	Nov. 4	MN	16	24	07.2	4.0				1449	
		MZ		24	16.1	3.0					
		ME2		24	51.2	4.6					
		F		40	20.0		+120		+25		
		P	17	58	16.9						
		L	18	00	48.8						
282	" 5	i		02	15.9					5281	
		ME		02	25.1	3.4					
		MN		02	36.8	3.0					
		F		14	20.0		+8		+11		
		P	12	26	41.1						
		S	33	38.4							
283	" 8	L	37	45.6						--	
		ME	39	48.1	10.7						
		MN	42	47.4	11.5						
		F	55	50.0		+50		+53			
		e.P	2	57	54.4						
		i.P		58	17.4						
284	" 12	L	59	48.7						495	
		F	3	00	10.0						
		P	6	09	48.4						
		L	10	55.1							
		ME	11	13.8	2.6						
		MN	11	43.1	2.6	+24		+33			
285	" 12	MZ	11	56.8	2.9					329	
		F	20	50.0				+8			
		P	13	11	41.9						
		i	11	46.6							
		L	12	26.2							
		ME	13	30.1	3.0	+10		-13			
286	" 13	MN	13	43.7	3.2					180	
		F	22	20.0							
		P	12	31	15.2						
		L	37	39.6							
		F	37	10.0							
		P	16	35	46.4						
287	" 13	L	36	16.9						227	
		ME	36	23.6	1.5						
		MN	36	44.7	1.5						
		F	41	20.0		-4		-4			
		P	17	55	40.1						
		i	55	41.8							
288	" 13	L	55	54.2						105	Felt slightly at Osaka.
		ME	55	56.4	0.4						
		MN	55	57.1	0.4						
		MZ	55	54.9	0.4						
		F	18	03	50.0		-29		+39		
		P	1	42	15.9				+17		
289	" 15	L	42	51.9						267	
		ME	43	02.0	0.6						
		MN	43	02.0	0.6						
		F	48	20.0		-5		-5			
		P	14	35	54.8						
		L	36	02.9							
290	" 15	ME	36	07.5	0.7					60	
		MN	36	07.4	0.7						
		F	40	40.0		+8		-12			

*manga 15/16, 27.*

# OSAKA JAPAN

december 1931

## SEISMOLOGICAL BULLETIN of the Osaka Meteorological Observatory

$\phi = 34^{\circ} 39' N.$   $\lambda = 135^{\circ} 32' E.$  Gr.  $h = 3.4m$  Sub-Soil: Sandy Loam (Oldquaternary)

Instrument: Omori's Seismograph  
(Horizontal & Vertical)

Wiechert Seismograph  
(Horizontal & Vertical)



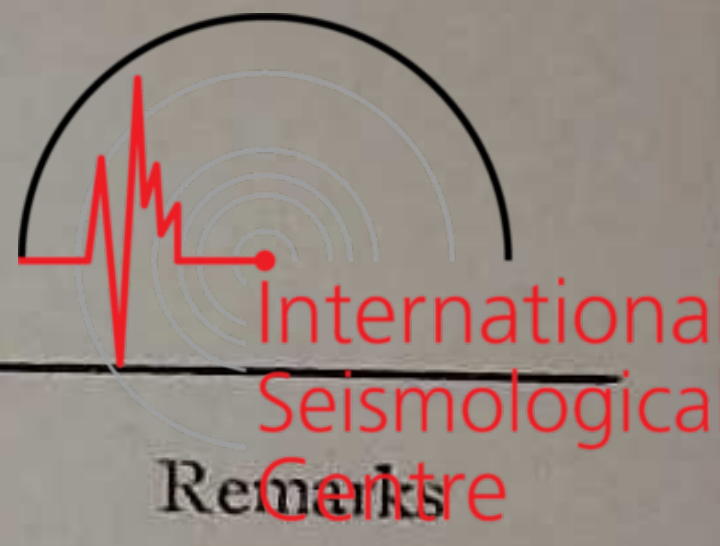
	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
$A_E$ :	30	—	0.003	20
$A_N$ :	30	—	0.003	20
$A_Z$ :	15	—	0.004	20

	$T_0$	$\epsilon$	$\frac{r}{T_0^2}$	V
$A_E$ :	4	3.2	0.003	80
$A_N$ :	4	3.2	0.003	80
$A_Z$ :	6	2.0	0.005	80

No.	Date	Phase	G.M.T.			Period s	Amplitude			$\Delta$ k.m.	Remarks
			h.	m.	s.		$A_E$ $\mu$	$A_N$ $\mu$	$A_Z$ $\mu$		
291	Nov. 20	P	14	25	37.6				5564		
		S	"	32	50.9						
		L		39	58.3						
		F		59	40.0						
292	Dec. 4	P	19	37	47.3				80		
		L		37	58.1						
		ME1		37	58.3	0.5	-19				
		MN1		37	58.5	0.7		-18			
		ME2		38	22.1	0.5	-20				
		MN2		38	28.2	1.1		-19			
		F		41	40.0						
293	" 6	P	9	07	42.4				L 108		
		L		07	56.9						
		ME		08	06.1	1.1	-4				
		MN		07	56.5	1.1		+8			
		F		10	30.0						
294	" 8	e.P	12	17	46.7				794		
		e.L		19	33.6						
		ME		19	57.7	3.2	-5				
		MN		20	19.1	3.3		+6			
		F		25	0.0						
295	" 12	P	5	09	56.1				100		
		L		10	09.5						
		ME		10	09.5	0.4	+3				
		MN		10	09.5	0.4		-5			
		F		13	0.0						
296	" 14	P	19	23	45.0				1386		
		L		26	10.7						
		F		33	20.0						
297	" 18	P	17	14	15.3				456		
		L		15	16.7						
		ME		17	16.2	3.5	+11				
		F		21	50.0						
298	" 18	P	17	46	58.7				517		
		L		48	08.2						
		ME		49	09.8	2.3	-14				
		F		57	20.0						
299	" 21	P	5	48	24.3				472		
		L		49	27.8						
		i		49	45.1						
		ME		51	15.4	3.9	+99				
		MN		50	55.5	4.9		-169			
		F		6 02	30.0						

**OSAKA JAPAN**

December 1931

**SEISMOLOGICAL BULLETIN  
of the Osaka Meteorological Observatory**

No.	Date	Phase	G.M.T.			Period s	Amplitude			△ k.m.	Remarks
			h.	m.	s.		A <sub>E</sub> μ	A <sub>N</sub> μ	A <sub>Z</sub> μ		
300	Dec. 22	P	13	09	06.9				516		
		L		10	16.3						
		i		10	25.1						
		ME		11	52.0	3.9	+162				
		MN		11	34.5	4.2		±233			
		F		27	10.0						
301	" 23	P	10	52	32.7				56		
		L		52	40.2						
		ME		53	31.1	1.7	-44				
		MN		53	15.0	1.7		+49			
		MZ		53	18.0	1.7		-18			
		F									
302	" 23	P	10	53	39.8				65		
		L		53	48.5						
		ME		54	28.5	3.5	-14				
		MN		54	44.8	3.2		-18			
		MZ		54	59.1	2.3		-6			
		F		57	10.0						
303	" 23	P	12	28	38.5				173		
		i		28	44.5						
		L		29	01.7						
		ME		29	27.5	1.8	+24				
		MN		29	22.0	1.8		+22			
		MZ		29	04.1	2.3		+13			
304	" 26	P	1	44	03.2				471		
		L		45	06.6						
		ME		46	56.5	4.1	+263				
		MN		46	31.2	4.9		+37.5			
		MZ		46	42.5	3.2		-122			
		F		2	00	30.0					
305	" 30	P	3	42	49.2				205		
		L		43	16.8						
		ME		43	54.8	3.4	+67				
		MN		45	16.2	4.8		-81			
		MZ		44	26.0	2.3		-26			
		F		52	0.0						
306	" 30	P	15	48	25.5				58		
		L		48	33.2						
		ME		48	33.2	0.4	-3				
		MN		48	33.2	0.4		+4			
		F		50	40.0						
307	" 30	P	16	03	13.6				57		
		L		03	21.2						
		ME		03	21.2	0.4	-1				
		MN		03	21.4	0.4		+2			
		F		04	50.0						

( END )