

SEISMOLOGICAL BULLETIN

$\phi = 33^{\circ}33'28''N$        $\lambda = 133^{\circ}31'52''E$        $h = 40.4 m$

Underground : Serpentin

Constants of the Seismographs



Geophysics Library

Date	Apparatus	Component	$T_o$	$\epsilon$	$\frac{r}{T_o^2} \left( \frac{mm}{sec^2} \right)$	V
Jan. 7	Wiechert 200kg	N	4.7	12	0.004	72
"	"	E	6.4	10	3	63
"	" 80kg	Z	4.3	9.5	15	67
"	Omori 16kg	N	20.0	4.0	0.005	20
"	"	E	22.0	5.0	5	"

No.	Date	Phase	G.M.C.T.			Period	Amplitude			Remarks
							$A_E$	$A_N$	$A_Z$	
1	Jan. 1	F	h	m	s	s	$\mu$	$\mu$	$\mu$	* mark in amplitude denotes semi-maximum amplitude no mark First motion
		SE	23	55	50~51					
		SN								
		LE		59	27	30				
		LN			29	22				
2		F	00	20±						
2	Jan. 2	e	10	35±						
		F	11.3							
3	Jan. 12	e	13	59	11				本山 微震	
4	Jan. 12	P	20	40	15					
		eSE		45	04					
		F	21±							
5	Jan. 15	P?	02	09	24					} W.
		PCP?			52					
		eN		17.4						
		S		19	28					
		SR <sub>1E</sub>		25	38					
		L?E		33.5		30				
		M <sub>1</sub>		37.8		23	*±50			
		M <sub>2</sub>		40.8		24	*±40			
		M <sub>3</sub>		45.9		26	*±80			
		M <sub>4</sub>		48.9		26	*±140			
		M <sub>5</sub>	03	11.5		18	*±80			
			to	12.5		18				
		M <sub>6</sub>		14.9		18	*±40			
			to	15.9		18				
		M <sub>1N</sub>	02	49.3		24		*±120		
		M <sub>2N</sub>		50.8		23		*±170		
		M <sub>3N</sub>		54.5		19		*±80		
			to	55.9		19				
		M <sub>4N</sub>		58.0		22		*±150		
			03	00.1		19		*±80		
M <sub>5N</sub>		01.2		19		*±100				
M <sub>6N</sub>		04.3		19		*±60				
M <sub>7N</sub>		07.9		19		*±60				
M <sub>8N</sub>		12.4		19						
								} O.		
M <sub>Z1</sub>	02	36.6		27						
	to	38.0		24~19						
M <sub>Z2</sub>		48.0		18		*±200	Tp decreasing			
	to	50.0		18		*±100				
M <sub>Z3</sub>		52		22		*±200				
		54		20		*±200				
M <sub>Z4</sub>		56.8		20						
M <sub>Z5</sub>		58.3		16						
	to	00.4		20						
M <sub>Z6</sub>		07.1		16						
	to	08		20						
M <sub>Z7</sub>		10		20						
	to	11		17						
M <sub>Z8</sub>		12		17						
	to	14								
6	Jan. 15	ePN	13	39	42.6					Surface wave ?
		Pz			43.0					
		SN		40	13.5					
		S?Z			16.4					
		M <sub>N</sub>			22	2		*±20		
		ME-Z			-	2	*±7		*±10	
		eN			37	5		*±10		
CN			47							
		F	43±							
7	Jan. 15	eP	21	03	29					to be continued
		S?N		05	02	+3	+3	+		
		iz			42					
		eH			51					
		LN		06.3						
		M <sub>N1</sub>		06.9		10		*±200		

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No.	Date	Phase	G.M.C.T.			Period	Amplitude			Remarks	
			h	m	s		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
7 (Continued)	Jan. 15	M <sub>N2</sub>	21	08.3		10				} O. Trapezoidal waves	
		M <sub>N3</sub>		09.8		9		*±200			
		L <sub>E</sub>		06	28			*±150			
		e <sub>E</sub>		07	25						
		M <sub>E1</sub>		07.6		9		*±170			
		M <sub>E2</sub>		08	40	8		*±150			
8	Jan. 15	F		50±					} O. Trapesoidal waves		
		e <sub>P<sub>N</sub></sub>	22	50	11					} W.	
		P <sub>Z</sub>			15						
		S?		05.8						} O. gradually decreasing	
		L <sub>N</sub>	23	00	33	24~17					
		L <sub>E</sub>	to	22	03±					} Ditto	
		L <sub>Z</sub>	22	59.0		0.4 <sup>m</sup>					
		M <sub>E</sub>	23	01.0		26 <sup>s</sup>				} W.	
		F	to	23.5	10	20	14	*±30			
		9	Jan. 17	L	03	37±					
10	Jan. 17	P	16	55	50						
		F		57±							
11	Jan. 21	P	09	01	28						
		S		04	02						
12	Jan. 22	S?	17	03	06						
		M		03.5		3					
13	Jan. 22	i <sub>P<sub>Z<sub>N</sub></sub></sub>	21	15	07.4			-4.5	+6.5	Slightly felt. 本山町, 馬路村, 西豊永村, 弱震 美良布村, 安藝町, 高知市内, 弱(弱) 高知公園, 伊野町, 微震 震央: 愛媛縣銅山川流域	
		i <sub>S<sub>E</sub></sub>			07.8						
		(M <sub>E</sub> )			13.1	0.4	-28.0				
		M <sub>N</sub>			13.5	0.6		*±13			
		M <sub>E</sub>			15	0.4	*+35				
		i <sub>Z</sub>			13.8	1.3			-30		
		(M <sub>Z</sub> )									
		C			17						
		F			17±						
		14	Jan. 23	i <sub>P<sub>Z<sub>N</sub></sub></sub>	10	47	02.6				±0
i <sub>Z<sub>N</sub></sub>					03.4						
i <sub>E</sub>					03.8						
i <sub>S<sub>E</sub></sub>					08.6	0.6	-19.0				
(M <sub>E</sub> )					10			*-20			
M <sub>N1</sub>					12			*±17			
M <sub>N2</sub>					09.0						
i <sub>Z</sub>					10	1.7			-22	*±22	
M <sub>Z</sub>					10						
F					48.4						
15	Jan. 24	P <sub>Z<sub>N</sub></sub>	13	46	27						
		S <sub>H</sub>		50	41						
		F		14.3							
16	Jan. 27	e	10	23.4					Near Wakayama		
17	Jan. 27	P <sub>Z</sub>	20	15	50					} W.	
		P <sub>E</sub>			51						
		P <sub>R<sub>1E</sub></sub>		16	54						
		S <sub>E</sub>		21	09						
		e <sub>Z</sub>		27.0		7			*±100		
		M <sub>N</sub>		28	19	14.5		*±1,100			
		M <sub>E</sub>		30	03	15	*±1,060				
		M <sub>Z</sub>			06	15			*±1,600		
		F		23±							
		17-2	Ditto	i <sub>S<sub>E</sub></sub>	20	21	10				
e <sub>N</sub>				24	21						
L <sub>N</sub>				26.0		30	(ca)				
M <sub>N1</sub>				28	19	15	(*±100)	*±1,100			
C <sub>N0</sub>				29.2							
M <sub>E1</sub>				30	03	17.5	*±920	(*±250)			
C <sub>E</sub>				31.0							
M <sub>N2</sub>				30	44	17		*±600			
M <sub>N3</sub>				32	14	16		*±400			
M <sub>E2</sub>				33	56	15	*±450				
M <sub>N4</sub>					59	15		*±370			
M <sub>N5</sub>				35	14	16.5		*±450			
M <sub>N6</sub>				37	39	15		*±300			
18	Jan. 28			P	21	29	26.3				
		i			38.8	3.0	-	+	+		
		i <sub>S<sub>Z</sub></sub>			33.8		+27	-41	-52		
		e <sub>L<sub>Z</sub></sub>			35.8	0.4 <sup>m</sup>					
		M <sub>Z</sub>			36	56	20 <sup>s</sup>		*±400		
		M <sub>Z</sub>			40.8		19		*±350		
18-2	Ditto	(M <sub>Z</sub> )	to	42.6						} W.	
		F		42	13	17			*±300		
		e <sub>S<sub>E</sub></sub>	21	33.8	(49 <sup>s</sup> )						
		e <sub>S<sub>N</sub></sub>		33.9							
		e <sub>N</sub>		35	45	ca. 20					
		M <sub>N1</sub>		36	11	ca. 20					
		M <sub>N2</sub>		37	45	20		*±300			
		M <sub>E1</sub>		37	26	21		*±400			
		M <sub>E2</sub>		41	13	19	*±250				
		M <sub>N3</sub>		41	02	19	*±150				
		M <sub>N4</sub>		42	26	15		*±150			
		W <sub>2</sub> ?	00	46.7		6					
		(E)									W.

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 $\varphi = 33^{\circ}33'28''N$  $\lambda = 133^{\circ}31'52''E$ 

h = 40.4 m

Underground : Serpentin

Constants of the Seismographs



Date	Apparatus	Component	$T_o$	$\epsilon$	$\frac{r}{T_o^2} \left( \frac{mm}{sec^2} \right)$	V
Jan. 7	Wiechert 200kg	N	4.7	10	0.003	72
"	"	E	6.4	12	4	63
Jan. 8	" 80kg	Z	4.1	7.7	5	67
Feb. 1	Omori 16kg	N	20.0	3.2	5	20
"	"	E	22.0	6.5	5	"

No.	Date	Phase	G.M.C.T.			Period	Amplitude			Remarks
							$A_E$	$A_N$	$A_Z$	
			h	m	s	s	$\mu$	$\mu$	$\mu$	
19	Jan. 28	P S	22	20	12					
				24	31					
20	Jan. 29	1 2	02	54	46					
				55	31					
21	Jan. 29	M F	02	56.6						
			03.2							
22	Jan. 30	Pz S F	15	46	41					橿原村 弱震の弱き方
				47.2	53					
23	Feb. 2	ePz iz PR <sub>1</sub> eSe eSN eMN	22	59	08.1					Destructive in New Zealand
					12.1					
			23	02	31					
				09	22					
					30					
				27	46	28				Regular sinous waves group
		to		35±		(at initial)				
		eMz		23.3		Ditto				Ditto
		to		34.7						
		M <sub>E</sub>		29	42	27.5	*±450			
		M <sub>N</sub>			41	27.5		*±700		
		M <sub>Z</sub>			35	26.5			*±900	above by W. S.
		eM <sub>N</sub>	23	27	46	31				Entrance of M series
		M <sub>N</sub>		29	38	26.5		*±600		On the N comp., from M <sub>N</sub> to C <sub>N</sub> , regular
		M <sub>E</sub>			41	Ditto	*±250			sinous waves exist, gradually decreasing
		M <sub>N</sub>		31	52	22		*±250		the period
		M <sub>N</sub>		33	25	20		*±300		
		M <sub>E</sub>			26	20	*±100			
		C <sub>N</sub>		36.3						
	Feb. 3	F	02±							Above by O. H. S.
24	Feb. 4	ePz S <sub>N</sub> M F	18	55	22					Local shock near Wakayama
					41					
				56.2	—		*±1	*±2	*±1	
25	Feb. 6	S M	15	16	33					
				—	—		*±2	*±2	*±2	
26	Feb. 8	S M	17	20	27					P : unknown
				—	—		*±1	*±1	*±1	
27	Feb. 10	L <sub>N</sub> e <sub>N</sub> F	01	40.6		24				by O. H. S.
				42.2		11				
			02.0							
28	Feb. 10	Pz PR <sub>1</sub> S <sub>E</sub> F	06	43	11				+	Compression
				45.3						
				50	06					
			08.0							Above by W. S.
		S <sub>E</sub>	06	50	00					
		S <sub>N</sub>			05					
		M <sub>1</sub>		51.3		m	(mm)	(mm)		
		e <sub>E</sub>		54	14	0.6	*±0.1	*±0.1		
		M <sub>E2</sub>		58.3		16	*±0.02			
		M <sub>E3</sub>	07	03.8		21	*±0.03			
		eM <sub>E4</sub>		05.1						
		to		07.2						
		(M <sub>1</sub> )		06.6		18	*±0.07			
		M <sub>E5</sub>		08.5		17	*±0.05			
		M <sub>E6</sub>		10.3		17	*±0.04			
		M <sub>E7</sub>		12.5		16	*±0.04			
		M <sub>E8</sub>		15.4		15	*±0.03			
		M <sub>E9</sub>		18.0		20	*±0.02			
		M <sub>N2</sub>	07	01.4		22				
		eM <sub>N3</sub>		02.4		19		*±0.03		
		to		04.6						
		(M <sub>N3</sub> )		03.8		19				
		M <sub>N4</sub>		05.3		20		*±0.04		
		M <sub>N5</sub>		06.0		16		*±0.05		
								*±0.07		
										Above by O. H. S. (M. M.)

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$\phi = 33^{\circ}33'28''N$

$\lambda = 133^{\circ}31'52''E$

$h = 40.4 m$

Underground : Serpentin

Constants of the Seismographs



Date	Apparatus	Component	$T_0$	$\epsilon$	$\frac{r}{T_0^2} \left( \frac{mm}{sec^2} \right)$	V
Feb. 21	Wiechert 200kg	N	4.4	7.4	0.003	78
"	"	E	6.2	10.0	3	67
"	" 80kg	Z	4.2	7.8	5	67
"	Omori 16kg	N	20.0	3.2	5	20
"	"	E	22.0	6.5	5	"

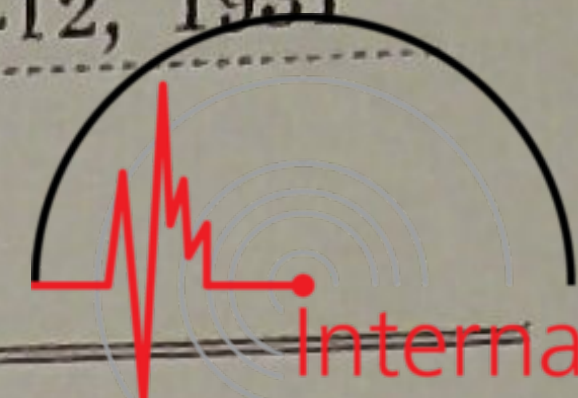
No.	Date	Phase	G.M.C.T.			Period	Amplitude			Remarks
							$A_E$	$A_N$	$A_Z$	
29	Feb. 12	$M_{N6}$	h	m	s	s	$\mu$	mm	$\mu$	} O. H. S.
		$M_{N7}$	07	09.6		15		$\pm 0.07$		
		$M_{N8}$		13.2		14		$\pm 0.09$		
		$M_{N9}$		15.3		15		$\pm 0.09$		
		F	08.5	22.7		17		$\pm 0.02$		
30	Feb. 12	Pz	05	52	53					} W. W. O. O.
		S		59	41					
		$M_N$	06	08.5						
		F	07±							
31	Feb. 12	S	19	50	51		$\mu$		Near quake	
32	Feb. 13	ePz	00	43	52					} 60km NE to Yonakunizima (與那國島), according to the Isigaki Met. Observatory $\Delta = 1,480km$ Difficult to ascertain
		ePR <sub>1</sub>			57					
		i		44	13		-11	-10	-16	
		S		46	30					
32	Feb. 13	L,M			.....					} W.
		F	01.0							
		ePz	01	39	42					
		S?		50	06					
		eE			31					
		Mz	02	07.6		30				
		$M_E$	02	05.9		24	$\pm 20$			
		$M_E$		07.0		33	$\pm 60$			
		to		09.0						
		$M_E$		09.0		29	$\pm 70$			
		to		09.7						
		$M_E$		09.7		23				
		to		12.3						
		( $M_E$ )		10.2		23	$\pm 40$			
		$M_N$		07.6		30		$\pm 100$		
to		09.8								
$M_N$		09.8		25		$\pm 50$				
to		11.8								
$M_N$		12.1		20		$\pm 30$				
$M_N$		13.3		20		$\pm 30$				
$M_N$		16.3		20		$\pm 20$				
to		18.1								
$M_N$		20.9		18		$\pm 10$				
F	05.0									
33	Feb. 13	$M_N$	22	45±					} W.	
		F	22.9							
34	Feb. 14	Pz	14	07	29~31				} Time-break. W. Below by O. H. S.	
		eSN		14.7		m				
		eLN		22±		0.6				
		F		29.0		19		$\pm 30$		
35	Feb. 16	eP	18	51	18				} $\Delta = 1,330km$ ; O. W. Below by O. H. S.	
		Sz		53	39					
		SN			41					
		LN		54.5		20				
		eE		55	22					
		eN			25					
		$M_N$			49	19				
		$M_E$		56	12	15	$\pm 100$	$\pm 100$		
		CN		57.5						
		F	19.2							
36	Feb. 19	Pz	17	49	10				} Entrance of $M_N$ series Trapezoidal rather regular waves group Regular smooth wave End of $M_N$ series	
		S		56.3						
		F	Continued on no.37							
37	Feb. 19	Pz	18	33	03				}	
		F	19.5							

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No.	Date	Phase	G.M.C.T.			Period	Amplitude			Remarks	
			h	m	s		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
38	Feb. 20	iP	05	35	58.8	3.2	μ -30	μ -150	μ +240	Maximum amplitude of P	
		PM		36	01.2	3.2		*+170	*-350		
		iSE	}	37	58.1	6	-300	small	small	Entrance of M <sub>E2</sub> series, consists of regular waves	
		eSN.Z			38	00	5;6	*+500	*+220		*+310
		M <sub>H</sub>			04	5				Above by W.	
		M <sub>Z</sub>			25						
		eE			38	8	*±260			Above by W.	
		M <sub>E2</sub>		39	38	10	*±450				
		M <sub>E3</sub>		06	30±					above by O.	
		F		05	35	59	5	-60	-280		
		iP			37	57	11		-200		
		S <sub>N</sub>			38	02	8	*±700			
		iSE			05	38	40	8	*±300	*+500	above by O.
		M <sub>E1</sub>			39	30	10		*±150	*±200	
		M <sub>N1</sub>			40	02	10	*±250			
		M <sub>E2</sub>				37	10		*±150		
M <sub>N2</sub>				02	10						
M <sub>N3</sub>				02	10						
M <sub>E3</sub>				02	10						
M <sub>N4</sub>				02	10						
39	Feb. 24	P?Z	14	12.6	(41 <sup>s</sup> )						
		eZ		12	54						
		L <sub>E</sub>		18.6		20					
		M <sub>E</sub>		20	50	15					
40	Feb. 25	F		40					Iiyuga-nada? Difficult to ascertain S		
		ePz	20	31	44						
		iz			53						
		iz			57						
		M <sub>Z</sub>		32	22	2			*±4		
		i <sub>N</sub>			56						
41	Feb. 27	iE			57				Compression Δ=ca 3400Km { by (P~S) and { (P~L)×7.4		
		M <sub>H</sub>			---		*±4	*±4			
		F		35±							
		iPz	09	44	06						
		S <sub>E</sub>		49	15						
		L <sub>N</sub>		51.7							
42	Mar. 1	L?E		53.6					Near quake		
		M <sub>N</sub>		54.5	22		*±30	*±30			
		M <sub>E</sub>		55.7	26		*±30				
		M <sub>N</sub>	10	04.8	18			*±20			
43	Mar. 1	F	10.7								
		e	14	26	15						
44	Mar. 2	e	14	28	49				W. O. Difficult to find.		
		Pz	02	29	07						
		S <sub>N</sub>		37.8							
		S?E		38.2							
45	Mar. 4	L,M			.....						
		F	0:35								
		iE(S?)	17	45	25						
46	Mar. 4	M		26	1.0	*±4	*±3	*±3			
		F		46±							
		iPz.N	18	06	06		±0	+2	-3		
47	Mar. 4	S		16					Tp very small throughout from P to M.		
		M <sub>Z</sub>		11	0.51 or less ditto						
		M <sub>H</sub>		21		*±7	*±4	*±6	本山町 微震 當所に於て感震器に感じたるも人身には感 覺無きが如し。 Near quake		
		F		07.0							
48	Mar. 5	iE	19	33	23				Trace of distant quake		
		eLN	18	22							
49	Mar. 6	F	19.0								
		Pz	16	14	43						
50	Mar. 6	eE		15	21						
		S <sub>N</sub>			37						
		S <sub>Z</sub>			43						
		S <sub>E</sub>			44						
		M		16	00	3	*±7	*±6	*±5		
		F		22±							
51	Mar. 7	eP?	16	54	52?						
		S <sub>N</sub>		55	42						
		M		56	10	3	*±7	*±6	*±6		
		F		02±							
52	Mar. 8	S <sub>H</sub>	10	16	50						
		L?E		22±							
		M <sub>N</sub>		30.0		14					
		F	11±								
		ePz	02	02	47						
52	Mar. 8	M <sub>E</sub>		36.0					W. Below by O.		
		M <sub>E</sub>		38.4							
		L <sub>E</sub>	02	32.6							
		M <sub>E1</sub>		36.0	18	*±20					
		M <sub>E2</sub>		38.4	17	*±40					
		M <sub>E3</sub>		39.2	17	*±30					
		M <sub>E4</sub>		41.3	16	*±30					
		L <sub>N</sub>		34.6							
		M <sub>N1</sub>		37.7	16		*±20				
		M <sub>N2</sub>		39.5	16		*±30				
		M <sub>N3</sub>		45.5	16		*±20				
		F	03.5								

SEISMOLOGICAL BULLETIN



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No.	Date	Phase	G.M.C.T.			Period	Amplitude			Remarks			
							A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>				
53	Mar. 9	ePz	03	51	13	5~6 Ca. 1 <sup>m</sup> at initial	mm	mm	mm	S off Cape Erimo(襟裳岬) Caused some damages on the neighbouring parts of Epicentre in Toohoku and Hokkaido △=ca. 1200km			
		P <sub>II</sub>			19								
		eS		53	23								
		eL <sub>II</sub>		53 <sup>4</sup> 5									
		M <sub>E1</sub>		54	52						*±2.6		
		M <sub>E2</sub>		55	07						*±2.5		
		M <sub>Z1</sub>			10							*±1.7	
		M <sub>Z2</sub>			40							*±2.0	
		Cz		56.2									
		e <sub>N</sub>		55.3									
		M <sub>N</sub>		55	37						16	*±1.0	*±13
		M <sub>E</sub>			37						16		
		eP <sub>N</sub>	03	51	17								
		eS <sub>N</sub>		53	23								
		eL <sub>H</sub>			38								
		M <sub>H1</sub>		54	49						18,21	*±1.8	*±2.0
		M <sub>E2</sub>		55	07						18	*±2.1	
		C <sub>E</sub>		56.1									
		e <sub>N</sub>		55.3									
		M <sub>N2</sub>		55	37						17		*±1.2
		C <sub>N</sub>		56.6									
		M <sub>N3</sub>		57.5							16		*±0.3
		M <sub>N4</sub>		59.8							14		*±0.3
	to	04	00.8										
M <sub>N5</sub>			01.8	15		*±0.2							
M <sub>N6</sub>			02.9	15		*±0.2							
M <sub>E3</sub>	03	56.8		14		*±0.4							
M <sub>E4</sub>	04	01.0		15		*±0.2							
	to		02.0										
F		07±											
54	Mar. 9	e	17	34±									
55	Mar. 9	L	18	01.4	16	< ±0.01		±0.01					
		M <sub>E</sub>		01.9									
		M <sub>N</sub>		02.5									
		F		06±									
56	Mar. 9	e	20	41±									
57	Mar. 9	e	21	16±									
58	Mar. 11	eL <sub>E</sub>	05	05.5									
		e <sub>N</sub>		05.2									
		F		20.±									
59	Mar. 11	e <sub>N</sub>	06	12.5									
60	Mar. 11	eP	12	29	56.4	18.5	μ - 3	μ + 2	μ + ?	Above by W.			
		e <sub>Z</sub>		30	07.6								
		S <sup>?E</sup>		32	32								
		e <sub>Z</sub>		33	37								
		M <sub>Z1</sub>		34	23						*±150		
		C <sub>Z</sub>		35.4									
		M <sub>N</sub>		34	25						16	*±80	
		M <sub>E</sub>			45						15	*±130	
		M <sub>Z2</sub>		36	19						15		*±120
		M <sub>Z3</sub>		37	58						13		*±80
		eP <sub>N</sub>	12	29	57								
		S <sub>N</sub>		32	22								
		e <sub>N</sub>		33.5							25		
		e <sub>N</sub>		34	06						18		*±150
		M <sub>N1</sub>			26								
		C <sub>N1</sub>			58								
		M <sub>N2</sub>		36	19						14		*±120
		M <sub>N3</sub>		40.6							14		*±50
		M <sub>N4</sub>		56.5							15		*±20
		eP <sub>E</sub>	12	29	55								
		S <sup>?E</sup>		32	30								
		M <sub>E1</sub>		34	46						16		*±140
		M <sub>E2</sub>		38.1							16		*±70
e <sub>E</sub>	from	42±		10									
F		14.5											
61	Mar. 12	eP	10	44	01	14,16				Above by O. H. S.			
		e <sub>Z</sub> .E		48.0									
		M <sub>E1</sub> M <sub>Z1</sub>		48.9							*±30	*±70	
		e <sub>N</sub>		48.2									
		M <sub>N1</sub>		48.4							15	*±50	
		M <sub>N2</sub>		49.4							14	*±50	
		M <sub>Z2</sub>		50.2							17		
		C <sub>Z</sub>		52								*±30	
		F	11	30±									
		L <sub>E</sub>	10	46.3									
		e <sub>E</sub> .N		48.2									
		M <sub>E1</sub>		48	54						14		*±35
		C <sub>E</sub>		49.2									
		M <sub>N1</sub>		48.5							16		*±40
M <sub>N2</sub>		49.4		16		*±50							
M <sub>N3</sub>		51.1		15		*±50							
F	12.0												

SEISMOLOGICAL BULLETIN



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No.	Date	Phase	G.M.C.T.			Period	Amplitude			Remarks
							A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>	
62	Mar. 12	eP	19	12	25	8	μ	μ	μ	W. O. O. O.
		M <sub>N1</sub>		16	52	14		*±20		
		M <sub>N2</sub>		18	46	13		*±20		
		F	20.0							
63	Mar. 12	eP	21	02	04					
		F		30±						
64	Mar. 14	e	12	54±						
65	Mar. 14	eP <sub>NE</sub>	16	35	56					W. W. W. O. W. Rather regular 3 waves
		S		38	03					
		eE		39	06					
		M <sub>E</sub>			33	16	*±20			
		C <sub>E</sub>		40.1						
		M <sub>N</sub>		40	16	16				
		C <sub>N</sub>		40.6					*±20	
		F	17.0							
66	Mar. 17	iP	09	47	01.0		+1	+1	+2	
		eSH			41					
		M <sub>H</sub>			44	1.4;0.4	*±10	*±15		
		M <sub>Z</sub>			45	0.6			*±5	
		C <sub>H</sub>			45					
		F		49±						
67	Mar. 18	eE	08	26±						Tp at Initial " " End parts
		M <sub>E1</sub>		47.8		18	*±20			
		M <sub>E2</sub>		52.8		22	*±25			
		to		54.2						
		M <sub>E3</sub>		57.5		19	*±20			
		EM <sub>E4</sub>	09	15.5		30	*±25			
		to	next M.			20				
		M <sub>E5</sub>		25.0		22	*±10			
		M <sub>E6</sub>		33±		17	*±10			
		to		38±						
		M <sub>E7</sub>		46.3		18	*±15			
		M <sub>E8</sub>		51.8		18	*±10			
		to		53.8						
		M <sub>E9</sub>	10	00.7		18	*±10			
to		03.7								
F		11±								
68	Mar. 18	eP	20	19	34				} W. P~S=4 <sup>m</sup> 43 <sup>s</sup>	
		eZ <sub>N</sub>		21.0						
		S <sub>E</sub>		24	17					
68-2	Ditto	S <sub>E</sub>	20	24	11				Below by O. H. S.	
		L <sub>N</sub>			23	20				
		EM <sub>E1</sub>		25	23					
		(M <sub>E1</sub> )			44	26	*±70			
		M <sub>E2</sub>		26	57	22	*±80			
		EM <sub>N1</sub>		27.0		Ca. 40		*±200		
		to		28.4						
		M <sub>N2</sub>		33.6		17		*±20		
		to		35.9						
		M <sub>N3</sub>		38.5		16		*±10		
M <sub>N4</sub>		42.6		17		*±20				
F	22.5									
69	Mar. 19	iP	06	29	28.2	5	-6	-4.5	-8.5	Below by W.
		iP <sub>R1Z</sub>			48.6	5.5			-45	
		iP <sub>R1H</sub>			49.6	5	-30	-33		
		iS <sub>E</sub>		33	11.6	4~6	*±50	*±50		
		eS <sub>N</sub>			35.9	5	*±30	*±40		
		iS <sub>R1H</sub>								
		F	07	40±						
69-2	Ditto	EM <sub>N</sub>	06	35.0					Below by O. H. S.	
		(M <sub>N1</sub> )		36.8		22		*±50		
		to		37.3						
70	Mar. 28	iP <sub>Z</sub>	12	46	14.4	10	-70	+60	+	Below by W.
		eP <sub>H</sub>								
		iS <sub>E</sub>								
		eS <sub>N</sub>								
		eE								
L										
70-2	Ditto	eS <sub>N</sub>	12	52	11					Apparently absent Below by O. H. S.
		iS <sub>E</sub>			27	10	-100			
		iS <sub>N</sub>			28	10			+100	
		M <sub>N1</sub>		52.6		10			*-160	
		M <sub>N2</sub>		53.1		13			*±80	
		EM <sub>E</sub>		55.6						
		M <sub>E</sub>		55	50	0.5 <sup>m</sup>	*±2			
		M <sub>N3</sub>		56.2		14			*±90	
		M <sub>N4</sub>		59.5		18			*±60	
		F	14±							
		71	Mar. 29	P	17	54	41.0		+	
S				57.3						
L				.....						
M										
F	18.2									

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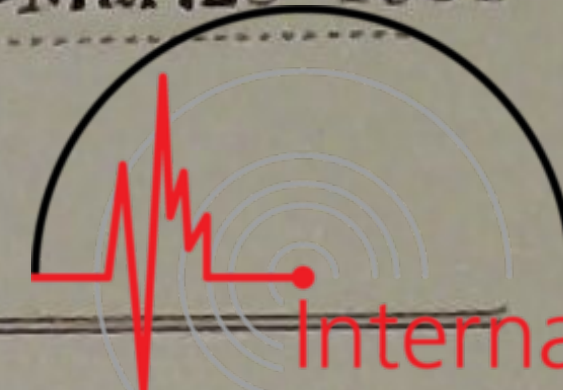


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No.	Date	Phase	G.M.C.T.			Period	Amplitude			Remarks
			h	m	s		A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>	
72	Mar. 30	M	00	53±		s	μ	μ	μ	Trace of the destructive equake occured in Nicaragua, Central America
73	Mar. 30	M	07	36±						
74	Mar. 31	iP ez iS (M <sub>H</sub> ) M <sub>Z</sub> F	14	46	04.2 14 15.5 17	0.6 2	-3.0 -33	±0 -14	+7.0 *±10	Felt slightly 昭和六年三月三十一日二三時四六分 安藝町, 野根村 } 弱震(弱き方) 美良布村, 馬路村 } 高知市の一部 高知測候所 微震 震央地は大徳島縣那賀川流域を推定さる
75	Mar. 31	ePz S M F	20	45	34 52 54 46±	{ H<1 Z=2	*±2	*±2	*±2	Near Wakayama
76	April 3	iP iSE eSN L?E L?N ME MN F	23	29	26.0 37 41 41.7 41.8 42.1 42.3 55	2.5 24 22	+2 *±5	-1	-6 *±5	Deep focus type
77	April 6	ePz? LE	06 07	58 09±	12					
78	April 6	ePz iS M L	07	30	16 20 — 31	<0.5	*±3	*±4	*±2	P~S=4s.2
79	April 9	iPEZ SZE iNE ME MN MZ F	05	32	20.0 34.5 37.6 38 38	2 <0.5 2 0.4 2	-4 *±25	±0 -22 *±30	+5 *±15	Felt moderately On Ecomp. this sharp phase overposed on the S wave Tabe-mati, Wakayama △=ca. 150km 昭和六年四月九日十四時三二分 高知測候所 弱震の弱 本山町(測) 全
80	April 9	ePEZ iPREZ ePRN eSE eLN eLE MN1 MN2 MN3 ME1 ME2 CE1 CF2 F	23	04	28.6 38.0 07.4 08.4 08.5 08.8 11.0 12.4 09.2 09 11.8 13.0	27 22 27 16 22 20	*±40 *±40	*±10		Amp. of L phase Amp. of L
81	April 10	F	00.0							
81	April 19	ePEN SN? eLEN MN1 CN1 MN2 ME F	02	33	18 55 35.0 35.3 35.7 36.3 35.2	15 11 10 10	*±60 *±20 *±30			
82	April 21	ePNZ iPNZ iSE eSNZ iSN eSZ ME1 MN MZ eE ME2 F	00	03	22.9 34.3 04 26.4 28.5 29 30 32 05 08 18 12±	4 4 4 6	*±40 *±40 *±15	+5 -30 -30 *±30	+ +9 *±10	



## SEISMOLOGICAL BULLETIN



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No.	Date	Phase	G.M.C.T.			Period	Amplitude			Remarks	
							A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
			h	m	s	s	μ	μ	μ		
83	April 24	P S M F	02	40	17 29		*±4	*±4			
84	April 24	P <sub>N</sub> eL <sub>E</sub> F	17	30	29 41.3						
85	April 27	eP <sub>Z</sub> S <sub>NE</sub> S <sub>N</sub> L <sub>E</sub> M <sub>E</sub> M <sub>N</sub> F	17	01	44 39 45 28.1 30.1 34.0	23 20 16	*±20	*±20		W. W. O. O. O. O. O.	
86	April 28	P <sub>Z</sub> P <sub>E</sub> S <sub>N</sub> M F	05	43	56 57 34	3,3,1	*±5	*±35	*±20		
87	April 28	S <sub>N</sub> M F	06	06	52 to 22 07±		*±4	*±25			
88	April 28	P <sub>E</sub> P <sub>Z</sub> S <sub>N</sub> M F	08	48	00 02 36		*±4	*±30			
89	April 30	P S M F	04	39	58 16 41	<0.5			*±2		
90	May 11	e F	18	30	23 32±						
91	May 12	iP <sub>Z</sub> S <sub>N</sub> iS <sub>E</sub> iS <sub>Z</sub> L <sub>E</sub> F	01	42	33 56 05 06 50±					W. O. O.	
92	May 13	M <sub>E</sub>	08	49.2		17	*±5			O.	
93	May 13	eP <sub>Z</sub> F	23	05	39 17±						
94	May 20	e e <sub>E</sub> e <sub>E</sub> e <sub>E</sub> M <sub>E</sub> to M <sub>E1</sub> M <sub>E2</sub> M <sub>E3</sub> M <sub>N</sub> M <sub>N1</sub> M <sub>N2</sub> M <sub>N3</sub> M <sub>N4</sub> M <sub>N5</sub> M <sub>N6</sub> F	02 03	41± 48 05.2 12.2 17 21.2 18.6 19.8 25 17.6 17.9 20.1 24.4 27.6 29.4 32	32 14	22 22 18 22 20 20 20 17 16	*±100 *±100 *±50			W. O.	
95	May 24	P <sub>N</sub> eS <sub>E</sub> F	00	18	26 22.7						
96	May 25	e F	06	52							
97	May 25	iP S F	08	56	07 15 57.0		*±1	*±1	*±4		
98	May 28	P? iS	16	17	16 49						
99	May 28	M	17	47							

SEISMOLOGICAL BULLETIN



No.	Date	Phase	G.M.C.T.			Period	Amplitude			Remarks	
							A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>		
100	June 1	eP	h	m	s	s	μ	μ	μ	Deep focus	
		iPz	02	38	57.0		—	—	+		
		iSE			57.5				+4		
		Sz		39	46.2			+30			
		iSEN			46.5		4	+85	-65		
		iSz			47.0		4				-130
		ME			48.0		4				
101	June 4	MNZ	=iSE		50	4		*+150	*±100	P-S = 01.8 0	
		F	03.2								
102	June 5	P	00	11	23	<0.1	*±5	*±5			
		S			24						
103	June 9	M		12							
		F									
103	June 9	e	20	24.6		4	*±20	*±25		Z comp. no working	
		F		28±							
		ePE	05	09	26						
		S		10	52						
		SE		11	18						
104	June 11	iS			30	3	*±15	*±35		Ditto	
		M			35						
		F		20±							
		P?	06	17	19?						
		P(?)			30						
105-1	June 17	S			18	3.5	*±50	*±100	*±100		
		S			19						
		S			31						
		M			50						
		F		30							
		ePE	12	10	59						
		ePz		11	00						
		ePE			02.5						
		PNE			29						
		Pz			30						
105-2	Ditto	SN			12	6.5	*±50	*±80	*±100	Above by W.	
		SN			24						
		MNE			38						
		Mz			44						
		ME2			50						
		MN2			53						
		ME3		13	10						
		F		30							
		SN	12	12	22						
		106	June 21	iPEZ	00						00
S					35						
M					—						
F				01							
107-1	June 23	P	06	16	45.1	4, 3	*±50	*±80	*±50	W.	
		iPz			57.4						
		SEZ		18	20						
		Mz			46						
		MN			56						
		MEZ		19	00						
107-2	Ditto	F	07.0			7	*±100	*±150	*±100	O. H. S.	
		P	06	16	45.1						
		eSN		18	13						
		SE			22						
		eLN		18.6							
		eLE		18.7							
		MN1		18	37						
		MN2		18.9							
		ME		19.5							
		F	07.0								
108	June 27	e	17	10±							
109	June 28	P?	16	10.3							
		S		11	15						
		F		12							
110	June 29	eP?	05	23	50?						
		iP			54						
111	June 29	S		24	01						
		iS	08	24	55						
112	June 29	F		26±							
		P?	16	10	33?						
113	June 29	S?		11	30?						
		PE	16	44	16.2						
114	June 29	Pz			16.6	4	+80	-80	*±35	Slight on N.	
		iPE			17.2						
		iPz			17.4						
		S			58.3						
		iS		45	02.9						
		M			05						
		F	17.0								
e	20	34	42								

弱震  
微震

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No.	Date	Phase	G.M.C.T.			Period	Amplitude			Remarks
							A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>	
115	July 1	ePz S F	h 06	m 42 43 45±	s 56 13	s	μ	μ	μ	
116	July 2	eP L? F	03	41 45.4 52±	44					
117	July 4	ePzE iP iSE ME MNZ F	16	02 03 03 06±	46.0 47.0 03.0 06	0.4 0.4	+ -13 *±15	+ -10 *±20	- +12 *+15	昭和六年七月五日午前一時三分 震央 紀淡海峽 高知測候所 野根村 魚梁瀬 微震 弱震 微震
118	July 10	PE eS F	13	11 13 22±	56(?) 22					
119	July 12	ePz PE iSE eSz F	16	50 54 17.5	30 35 44	6 6				
120	July 15	eP S ME F	16	32 37.6 44.3 17.0	43	13	*±20			
121	July 18	iPz PNE SNE LE F	11	29 34 39.6 12.5	42.2 24	2 22	-3	-3	+6	W. W W., O. W., O. O.
122	July 19	M F	12	27.2 30						Record of Nearquake
123	July 21	iP iS MH MZ F	02	10 (=P)	23.3 28.4 30 40	0.3	-2 *±5	+4 *±7	-∞ *±5	昭和六年七月二十一日午前十一時十分 震央 長澤附近 本川村長澤 (土佐郡) 微震
124	July 21	iPz SEN F	03	46 55 04.2	47.5 16					
125	July 23	Pz iz iH iz ez.N eSE eSN iNE eLE F	14	28 33 34 40.2	39.2 43.9 44 48 31 48.1 50.1 56.9	1.5 2	*±3	*±5	<*±1 *±8 *±8	W.
125-2	Ditto	eLE	14	40.2		12	<*±5			O. H. S.
126	July 5	LN F	12	57± 13.3						
127	July 27	iPN iNZ iSNE M F	23	55 56±	35.9 36.7 38.9 41	0.5	*±2	*±2	*±2	昭和六年八月八日午前八時五五分 本山町(測) 微震
128	July 28	e M F	02	07.4 09 11±	00					
129	July 30	iPz S M F	15	16 17 18.0	39 54.5 01	1	*±1	*±1	+	P~S=15s.5
130	July 30	e	19	49.7						
131	Aug. 2	e SE LE F	20	15.2 18 18.8 20.6	0.3					} O. H. S.
132	Aug. 2	PNZ SE F	23	34 37 40±	12 52					
133	Aug. 5	e LE F	07	29± 32.3						Trace of Distance quake
134	Aug. 6	eLE F	15	37.1 50±		14				(M. M.)

SEISMOLOGICAL BULLETIN

$\phi = 33^{\circ}33'28''N$

$\lambda = 133^{\circ}31'52''E$

$h = 40.4m$

Underground : Serpentin.

Consants of the Seismographs



Date	Apparatus	Component	$T_o$	$\epsilon$	$\frac{r}{T_o^2} \left( \frac{mm}{sec^2} \right)$	V
August 10, 1931	Wiechert 200	N	4.6	7.	0.002	60
	" "	E	6.4	10.	2	70
	" 80	Z	3.7	6.5	4	67
	Omori 16	N	20.0	3.2	0.004	20
	"	E	22.0	5.5	4	20

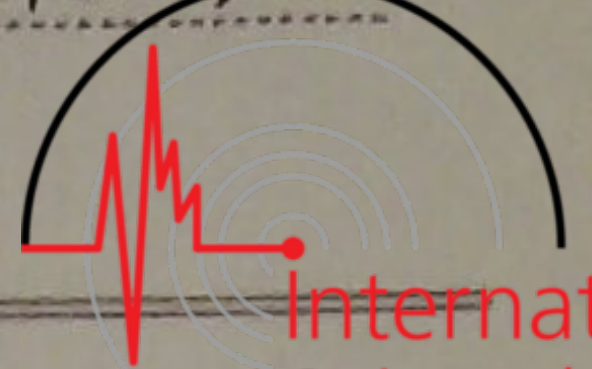
No.	Date	App.	Phase	G.M.C.T			Period	Amplitude			Remarks
								$A_E$	$A_N$	$A_Z$	
135	Aug. 6	W	ePz εSE iz Lz LE F	h 18	m 21	s 52	s 2.5 ca. 10				i sharp } beginning g radual } ε faintly discernible beginning
136	Aug. 7	W	ePz iPR <sub>1</sub> iSE LE MZ <sub>1</sub> to MN ME MZ <sub>2</sub> MZ <sub>3</sub> MZ <sub>4</sub> F	02	18	47	24~20				mm *±0.7 mm *±0.3 *±0.2 *±0.3 *±0.3 *±0.2
137	Aug. 7	W	eP εS M F	23	35	13	<0.5				*±2 *±2 *±2
138	Aug. 8	W	iPNZ ePE iSE Sz ME MNZ F	17	01	52.0	2				0 -2 +3 -4 *±5 *±4 *±4
139	Aug. 10	W	eP iS M F	08	00	56	<0.5				01 08 S~10 <sup>s</sup> 02 *±4 *±4 *±2
140	Aug. 10	W	ePz ePz iP εS iz iSz Mz MH F	14	35	04.2	4 2				+ } Apparently absent on H comp. Epic. Tenryū-gawa. Sizuoka-Ken *±25 *±50 *±100
141	Aug. 10	W	ePH iSE LE M C <sub>1</sub> ez Mz MH EMz Mz MH Mz MH Cz CH MH Mz	21	25	40	10 22 7 15 13 14 12 11 10 14 13				49°N, 92°E J. S. A. 49°N, 87°E Manila W. B. mm *±0.5 *±5.0 *±0.0 *±6.0 *±7.0 *±1.4 *±4.3 *±3.3 *±1.6 *±2.5 *±2.0 *±3.5 *±3.3

SEISMOLOGICAL BULLETIN



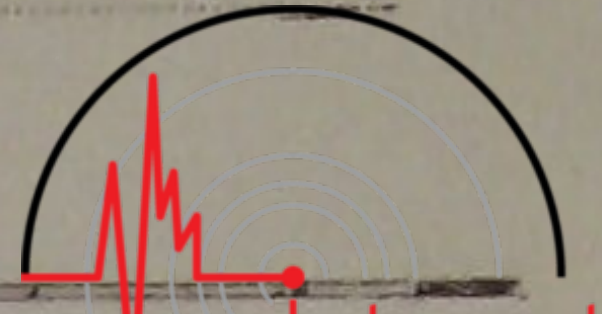
No.	Date	App.	Phase	G.M.C.T.			Period	Amplitude			Remarks								
								A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>									
141-2	Aug. 10	O	eP	h	m	s	s	mm	mm	mm									
			iS <sub>E</sub>	21	25	40	12	-0.20	-0.00										
			m(S)		31	32	27	*±2.0	*±0.3										
			L <sub>E</sub>		32	22	70												
			L		34.3		50	*-5.5	*-6.5										
			L		35	59	40	*-5.5	*-6.0										
			L		36	50	35	*-8.0	*-10.0										
			L		37	27	30	>*-7	>*-5										
			L		38	27	27~22	>*±5	*±5										
					to	39.3													
		M <sub>E</sub>	41	06	15	*-4.0		N comp. got defect											
		M <sub>E</sub>		21	15	*-2.6													
		M <sub>E</sub>	42	45	15	*-4.5													
	Aug. 11	F	00.5																
141-3	Aug. 10	O. P. S.	M	21	38.0		30	*±16	*±14	O. P. S.									
			M		38.4		25	*±14	*±19										
			M		38.6		22	*±17	*±18										
									E	T <sub>0</sub>	ε	V <sub>0</sub>							
									N	4.6	2.2	20							
142	Aug. 11	W	ε <sub>F</sub>	07	22.8														
			F		30														
143	Aug. 13	W	eP	08	36	15	0.3	μ	μ	μ									
			eS			27													
			M			30													
			F		37.3														
144	Aug. 15	W	iP <sub>Z</sub>	12	45	58		-1	+2	+4	Deep focus Type								
			εS		47	40													
			L <sub>M</sub>								Both apparently absent								
			F	12	50														
145	Aug. 17	W	εP <sub>Z</sub>	17	50	40													
			εS <sub>NZ</sub>		52	03													
			M <sub>H</sub>			40						2	*±5	*±3					
			M <sub>Z</sub>		52.8							2							
			F	18	00						*±3								
146	Aug. 18	W	εP <sub>Z</sub>	05	42	00													
			εS <sub>Z</sub>		43	35													
			eS <sub>N</sub>			54													
			M <sub>Z</sub>		44	07						4			*±5				
					to							47							
					M <sub>E</sub>							13	4	*±10					
		M <sub>N</sub>		19	3		*±10												
		F		52															
146-2		O.	L <sub>E</sub> ?	05	44.2						No trace on N								
			M <sub>E</sub>		44.8							16	*±10						
			M <sub>E</sub>		45.4							9	*±20						
			M <sub>E</sub>		46.2							12	*±10						
			to	47.5						Regular waves group									
147-1	Aug. 18	W	eP <sub>Z</sub> E	}	14	28	01.0		+3	0	+4	47°. 5N, 89°E Manila W. B.							
			εP <sub>N</sub>																
			ε <sub>E</sub>											33	39	27			No trace on N
			L <sub>E</sub>											39					
			ε <sub>Z</sub>											40.9		6		*±40	On H comp. the waves correspond to this superposed on the long waves
			M <sub>H</sub>											40.9		16	*±250	*±300	
M <sub>H</sub>		43	27	13	*±500	*±400													
			M <sub>Z</sub>			24	13			*±800									
			M <sub>Z</sub>			31	12			*±800									
147-2		O.	eP <sub>E</sub>	10	28	01													
			ε <sub>E</sub>		33	39						27							
			εL <sub>E</sub>		39							33							
			M <sub>E</sub>		40	46						19	*±250	*0					
			εEM <sub>E</sub>		43.2														
			M <sub>E</sub>		43	26						14	*±600						
			M <sub>N</sub>		41	31						18		*±100					
			M <sub>N</sub>		43	28						14		*±310					
		F	15.5																
148	Aug. 19	W	iP̄	01	27	52.5	2.0	+	-	+14	Felt moderately								
			iS̄ <sub>NZ</sub>			55.2													
			M			58													
			C		28	00													
			F		38														
148-2		O. P. S.	iP̄	01	27	52.4		+10	-30		昭和六年八月十九日午前十時二八分 震央 瀬戸川上流(土佐郡地藏寺村) 高知測候所 弱震の弱 本山町(測), 長澤, 池川町, 名野川村, 長者村, 伊野町 弱震 檜原村(測), 美良布村, 安藝町, 宿毛町, 室戸岬(測) 弱震の弱 微震								
149	Aug. 20	W	iP	00	01	17	3	+3	-2	-2									
			F		09±														
150	Aug. 21	W	S	19	23	21													
			F		25														
151	Aug. 22	W	εP <sub>N</sub>	22	55	17													
			S		55.9														
			M																
			F		57		1	*±2	*±2	*±2									

## SEISMOLOGICAL BULLETIN

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No.	Date	App.	Phase	G.M.C.T.			Period	Amplitude			Remarks
				h	m	s		$\Lambda_E$	$\Lambda_N$	$\Lambda_Z$	
152	Aug. 24	W	$\epsilon P_z$ S M	19	58	10 26 28				i sharp } beginning e gradual } e faintly discernible beginning	
					58.7						
153	Aug. 24	W	$\epsilon P_z$ $\epsilon S_N$	21	45	00 52				+	
154	Aug. 27	W	iPz $\epsilon S$ LN Mz1 Mz2 Mz3 ME Mz4 Mz5	15	36	59 44 55.5 03 04	50 14 15 15 15			*±0.2 *±0.2 *±0.5 *±0.4 *±0.2 *±0.1	
Ditto	Ditto	O	eS LN LE M1 MN2 MN3 CN MN4 MN5 ME F	15	44	42 55.5 56 58 01 02	28, 26 20 19	*±0.3	*±0.3 *±0.2 *±0.2	(Small) " " " "	2 waves Nearly equal amp. 4 waves End of MN3 series
					04	03	15		*±0.2		
					05	01	17		*±0.1		
				18.5	04	53	17	*±0.4	(Small)		
155	Aug. 31	W W. O O	$\epsilon P$ ME F	06	39	48 43.9					
				07.2							
156	Sept. 6	W	iP iSE M F	05	20	34.0 41.9 —	0.5	$\mu$ +5 *±20	$\mu$ +4 *±30	$\mu$ +9 *±10	Felt slightly 昭和六年九月六日午後二時二〇分 震央 高岡郡大野見村附近 大野見村 弱震 檮原(測), 江川崎村, 弱震の弱 三原村 微震 高知測候所
157	Sept. 8	W W O O O O	$\epsilon P$ $\epsilon S_E$ SE ME MN F	19	10	46 12.5 12 14.5 — 30	12 6	*±50	*±20		No long waves
158	Sept. 9	W	$\epsilon P_H$ e m1 m2 $\epsilon S_H$ $\epsilon S_Z$ iSH m F	20	42	25 43 17 23 38 39 44 49	7, 7, 6 12 6	*±110	*±160	*±100	Pz lost changing recording sheet
					43	11				*±150 *±50	
					45	38					
					30	49					
Ditto	Ditto	O	$\epsilon P$ eE ME eS m ME1 ME2	20	42	25 10 17 39 49 46.8 47.9	14 9 18 13	*+80 *±160 *±40 *±120	(Small) *±170		} No trace on N
159	Sept. 16	W	$\epsilon P$ PNE Pz Pz ez SNZ M EMz F	12	44	22 30 32 40 16 45 20 50 57 46 08	3.0 3.0	*±70	*±140	*±60 *±60	Near Mt. Huzi (富士山)
160	Sept. 16	W	$\epsilon P$ S? F	19	13	57 14 15					Southern part of Nara-ken, Upper region of the Kumano- gawa(River)
161	Sept. 18	W	$\epsilon P_z$ $\epsilon S_N$ M F	06	14	54 41 13 21	3	*±3	*±5	*±3	Bungo-suido
162	Sept. 18	W	P F	13	26	43 27.2					
163	Sept. 20	W	iPz iS M F	22	13	15 32 33 15	2	+ *±5	0 *±3	+2 *±2	

SEISMOLOGICAL BULLETIN



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No.	Date	App.	Phase	G.M.C.T			Period	Amplitude			Remarks	
								$\Lambda_E$	$\Lambda_N$	$\Lambda_Z$		
164-1	Sept. 21	W	eP <sub>EZ</sub>	02	21	20.8	8	$\mu$ +9	$\mu$ +5	$\mu$ -4	Some damage done in Saitama-Ken, 139.3E, 36.ON (C. M. O.)	
			iP			41	5	-50	-30	+23		
			eS <sub>Z</sub>		22	25						
			iS <sub>N</sub>			36				-150		
			eS <sub>E</sub>									
			iS <sub>NE</sub>			38			+200	+400		
			iS <sub>N</sub>			51			mm	mm		mm
			M <sub>Z</sub>			52						0.3
			M <sub>N</sub>			53						0.5
			M <sub>Z</sub>			56						0.3
			C <sub>Z</sub>			23.0						
			iE			23	03					
			M <sub>E</sub>				10			0.5		
			EM <sub>Z</sub>				10					
			M <sub>NZ</sub>				14					0.7
			M <sub>E</sub>				17			0.5		
			M <sub>N</sub>				22					0.8
			M <sub>E</sub>				28			0.6		
			M <sub>NZ</sub>				31					0.4
			C <sub>N</sub>				23.8					
C <sub>ZE</sub>				23.9								
F			04.0									
164-2	Ditto	O.	eP <sub>NE</sub>	02	21	21		$\mu$ +	$\mu$ +		Long wave which prevailing in the interval of P and S have next values Tp ca.22 <sup>s</sup> mean amp. $\pm 70\mu$ on the E components	
			iP <sub>E</sub>			41		-100				
			iS <sub>NE</sub>		22	36		+250	-250			
			iN			51			+600			
			iE		23	03		+1000	mm			
			M <sub>N</sub>			05				1.0		
			M <sub>N</sub>			20				0.9		
			M <sub>E</sub>			25			1.1			
			C			23.5						
			164-3	Ditto	O. P. S.	eP	02	21	23			
iP						42						
eS		22				23						
iS						38						
M <sub>N</sub>						53						
M <sub>N</sub>		23				08						
165	Sept. 21	W	e	06	24.0							
			F		25 $\pm$							
166	Sept. 21	W	e	06	51.4							
			M <sub>N</sub>		51	48	3	0	2	0		
			F		53 $\pm$							
167	Sept. 21	W	eP <sub>Z</sub>	10	32	18						
			iz			26						
			eS <sub>E</sub>		36	44						
			M <sub>N</sub>		41.9		12	mm	mm	0.1		
			EM <sub>N</sub>		42.7							
			EM <sub>EZ</sub>		42.9							
			M		44.1			0.1	0.1	0.2		
F		11.5										
168	Sept. 21	W	iz	13	46	40						
			ez		47	25						
			F		48 $\pm$							
169	Sept. 22	W	eP	01	30	22						
			eS <sub>N</sub>		34	13						
			F		38 $\pm$							
170	Sept. 22	W	eP <sub>Z</sub>	08	36	46						
			iP <sub>Z</sub>			57						
			i		37	09						
			eS <sub>Z</sub>			25						
			M			27						
			F		41 $\pm$			$\mu$ 5	$\mu$ 5	$\mu$ 5		
171	Sept. 25	W	eP <sub>Z</sub>	06	08	32						
			eS <sub>E</sub>		15	30						
		O.	eE		16.1							
			eL <sub>E</sub>		22							
172	Sept. 23	W	F		08 $\pm$							
			eP <sub>Z</sub>	04	55	38						
			eP <sub>N</sub>			54						
			eP <sub>Z</sub>			56						
			eS		56	36						
M		57.1										
F		05	04 $\pm$		2, 2, 1	5	5	3				

# KOTI Meteorological Observatory

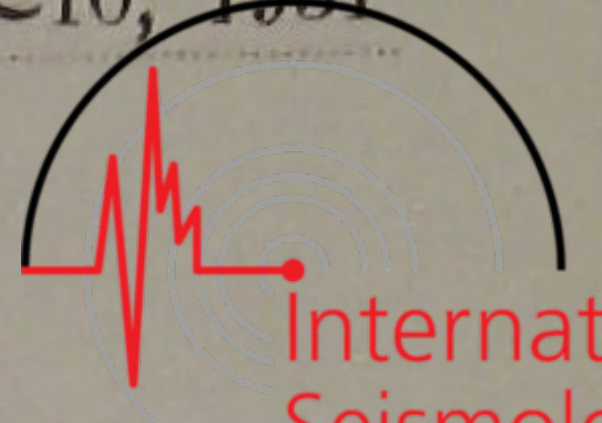
Oct. 2~10, 1931

## SEISMOLOGICAL BULLETIN

$\phi = 33^{\circ}33'28''N$        $\lambda = 133^{\circ}31'52''E$        $h = 40.4m$

Underground : Serpentin.

Consants of the Seismographs



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Date	Apparatus	Component	$T_o$	$\epsilon$	$\frac{r}{T_o^2} \left( \frac{mm}{sec^2} \right)$	V
August 10, 1931	Wiechert 200	N	4.7	7.	0.002	60
	" "	E	6.4	10.	2	70
	" 80	Z	3.7	6.5	4	70
	Omori 16	N	20.0	3.	0.003	20
	"	E	22.0	5.	3	20

No.	Date	App.	Phase	G.M.C.T			Period	Amplitude			Remarks
								$A_E$	$A_N$	$A_Z$	
				h	m	s	s	$\mu$	$\mu$	$\mu$	
173	Oct. 2	W	$\epsilon P_Z$	17	38	15	8	5	10	3	36.°0 N 139.°3E (C.M.O.) Aftershock of No. 164.
			$\epsilon P_E$			23					
			$\epsilon S_E$		39	12					
			$\epsilon S_N$			37					
			m			40					
			$e L_E$		40.9						
		F		44±						Period diminishing to 5. <sup>s</sup>	
174	Oct. 3	W	$\epsilon P_Z$	19	22	20	9	(mm)	(mm)	(mm)	11°S, 161°E O=19 <sup>h</sup> 13 <sup>m</sup> 05 <sup>s</sup> Manila W. B. Destructive „Tunami” (Sea wave) at San Cristobal Island, Solomon group.
			$e P_{NE}$			21					
			i			33					
			$e N$		29	45					
			$i E$		30	02					
			$\epsilon L_E$		35						
			$e Z$		38.5	30					
			$M_Z$		40.2	26					
			$M_Z$		41	16~17					
			to		46						
			$M_E$		42.5	14~15					
			to		44.1						
			$M_N$		44.0	18					
			$M_Z$		46.3	16					
			to		47.5						
$M_Z$		48.6	17~18								
to		51.0									
Ditto	Ditto	O.	$e P_E$	19	22	21	54	2.6	1.3	0.7	14°S, 160°E U.S.C.G.S. 19 <sup>h</sup> 12 <sup>m</sup> 18 <sup>s</sup> 10°S, 161°4E J.S.A. 19 <sup>h</sup> 13 <sup>m</sup> 10 <sup>s</sup> $\Delta = Ca. 55^\circ$
			$e E$			34					
			$e S_E$		29	56					
			$e P S?_E$		30	06					
			$i L_E$		35	24					
			M		36	36					
			C		37.4						
			EM		37.4						
			M		38	16					
			$C_2$		38.8						
			M		39	21					
			M		40	14					
			$EM_2$		42.8						
			$C_3$		44.1	14					
			M		47	20					
F			17								
Continue next quakes											
175	Oct. 3	W	$e P_Z$	21	27	34					
			$e S_E$		34	50					
176	Oct. 3	W	$\epsilon Z$	22	04.6						
			i		05	09					
			$e S_E$		12	23					
			$e L_E$		18.8						
177	Oct. 3	W	$e P$	22	56	49					
			$i S_E$	23	04	09					
			$e L_E$		10.1						
			$M_E$		10.2						
			$M_E$		11.4						
			C		13.7						
	Oct. 4	O	F	01.5							
178	Oct. 5	W	$e Z$	12	55	04					
			e		56	12					
			S?			22					
			F		59						
179	Oct. 10	W	$i P_Z$	00	28	56	9	0.04	0.03	0.0	9° 1S, 160° 2E, J.S.A. 0 <sup>h</sup> 19 <sup>m</sup> 53 <sup>s</sup> 8°S, 146°E U.S.C.G.S. 0 <sup>h</sup> 19 <sup>m</sup> 48 <sup>s</sup> Tp, at initial Tp, at end parts
			i		29	21					
			$i S_{EN}$		36	06					
			$e L_E$		41.4						
			$i L_E$		41	57					
			to		45.						
M		43.0	23								



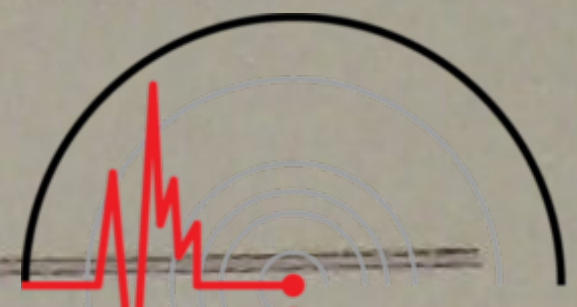
SEISMOLOGICAL BULLETIN



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No.	Date	App.	Phase	G.M.C.T			Period	Amplitude			Remarks
								$A_E$	$A_N$	$A_Z$	
				h	m	s	s	$\mu$	$\mu$	$\mu$	
Continued 179	Oct. 10	W	M	00	44.1		21	0.9			Probably aftershock of no. 174
			M <sub>N</sub>		45.6		22		1.1		
			M <sub>E</sub>		45.8		22	1.1			
			M <sub>N</sub>		46.6		24		0.9		
			M <sub>E</sub>		47.1		20	0.9			
			EM <sub>N</sub>		47.1		21		1.0		
			to		50.1						
			EM <sub>E</sub>		47.8		20	0.9			
			to		51.8						
			M <sub>N</sub>		50.9		16		0.2		
			M <sub>N</sub>		52.5		18		0.2		
			M <sub>E</sub>		53.5		17	0.2			
			M <sub>E</sub>		55.0		17	0.3			
			to		58						
			M <sub>N</sub>		55.0		17		0.2		
			to		56						
			M <sub>N</sub>		56		17		0.1		
			to		57						
			M <sub>N</sub>		57		17		0.25		
			to		59						
			M <sub>Z</sub>		45.2		22			0.9	
			to		46						
			M <sub>Z</sub>		47.3		19			1.2	
			to		48						
			M <sub>Z</sub>		48.8		19			1.5	
			to		50						
			M <sub>Z</sub>		51.8		18			0.5	
			to		54						
			M <sub>Z</sub>		54.6		18			0.6	
			to		56						
180	Oct. 10	W	eP <sub>Z</sub>	00	53	24					
			eS	01	00	37					
181	Oct. 10	W	eP	01	17	19					
			eS		24	46					
			eL		31.0						
182	Oct. 10	W	eP <sub>Z</sub>	01	39	50					
			$\epsilon$		47.2						
183	Oct. 10	W	eP <sub>Z</sub>	02	26	51					
184	Oct. 10	W	eP <sub>Z</sub>	02	33	37					
185	Oct. 10	W	$\epsilon$	03	05	48					
186	Oct. 10	W	$\epsilon$	16	49						
			F		17.5						
187	Oct. 17	W	iP	15	36	22					
			$\epsilon$ L <sub>E</sub>		40.5						
			F		46						
188	Oct. 18	W	eP <sub>Z</sub>	00	48	00					
			eS <sub>E</sub>		55	21					
			eL <sub>E</sub>	01	02						
			F		01.5						
189	Oct. 18	W	P	04	40	45					
			PR <sub>1</sub>		41	23					
			F		45						
190	Oct. 28	W	$\epsilon$ <sub>Z</sub>	05	39	35					
			$\epsilon$ S <sub>NE</sub>		43	18					
			F		06.5						
191	Oct. 29	W	$\epsilon$ <sub>N</sub>	08	42	19					
			e <sub>NE</sub>		44	37					
			i <sub>E</sub>		45	33					
			F		09.0						
192	Oct. 29	W	S	18	57	22					
			M			58					
			F		19.0						
193	Oct. 31	W	M	10	14						
			F		45						
194	Nov. 1	W	eP <sub>N</sub>	18	53	47					Huga-nada, West Japan 131.°9E, 32.°4N C. M. O. 幡多郡三原村, 宿毛町, 中村町 弱震の對 高知市内に於て微震部あり
			$\epsilon$ P <sub>YZ</sub>								
			e <sub>N</sub> $\epsilon$ <sub>E</sub>			53					
			i <sub>N</sub>		54	06					
			iS <sub>NE</sub>			10					
			iL <sub>NE</sub>			21					
			M			24	7, 7, 4	mm	mm	mm	
			EM <sub>N</sub>			41		0.3	0.2	0.08	
			M <sub>N</sub>			47					
			F	19	30					0.15	
		W., O. W									
		O	iL		54	21					
			M			27	8	0.35	0.35		
			M			34	16, 14	0.30	0.30		
			C		54.7						

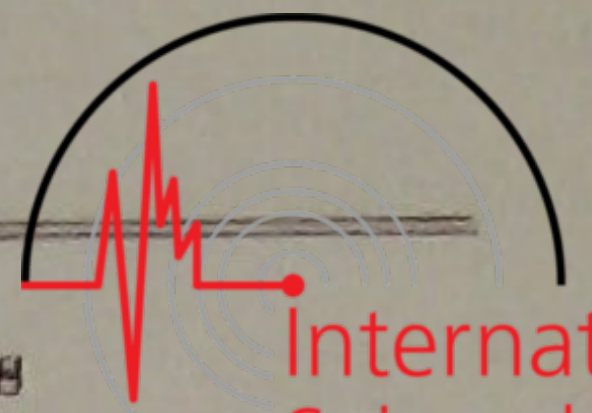
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No.	Date	App.	Phase	G.M.C.T			Period	Amplitude			Remarks							
				h	m	s		$\Lambda_E$	$\Lambda_N$	$\Lambda_Z$								
195	Nov. 2	W	ePNZ	10	03	31.6	8	$\mu$	$\mu$	$\mu$	Huga-nada, West Japan 132.°1E 32.°4N C. M. O.							
			$\epsilon P_E$									1,2	12,12	-260	-170	+300		
			iz,eh														36.0	
			iz														42.5	
			iEN														43	
			i														51.5	
			iz														04 09	3
			Mz														27	3
			Mz														35	3
			Mz														52	3
M <sub>H</sub>	—	11,11	mm	mm	mm	幡多郡宿毛町, 中村町 強震(弱) 全 三原村, 江川崎村, 橋原(測) 奥内村, 高岡郡大野見村, 窪川町, 長者, 高知測候所, 弱震 吾川郡池川町, 長岡郡本山町, 安藝郡安藝町, 野根村. 弱震の弱												
F	continued to next quake																	
196	Ditto	W	e	10	20.5													
197	Ditto	W	M	10	32.8													
198	Ditto	W	eP <sub>NE</sub>	11	01	06.0	6	$\mu$	$\mu$	$\mu$	幡多郡江川崎 弱震 高知測候所, 奥内村, 橋原, 中村町 窪川町, 長者, 本山町, 弱震の弱							
			iP <sub>NE</sub>									09.0						
			iP									22.0						
			m(P)															
			iS <sub>N</sub>									38.4	2.0	50	50	50		
iS <sub>Z</sub>	40																	
M	42	8,4,4	400	350	200													
F	11	30				Huga-nada, West Japan 132.°2E, 32.°3N C. M. O.												
199	Ditto	W	e	11	04.0													
200	Ditto	W	e	11	06						三原村, 宿毛町, 中村町 微震							
201	Ditto	W	P	11	11	18					宿毛町, 中村町 微震							
			S									12	44					
202	Ditto	W	M	11	17													
203	Ditto	W	$\epsilon$	20	24.3						宿毛町, 中村町 微震							
			iNE									43						
			iS <sub>N</sub>									25 13						
			M									25.4						
			F									30	1.5	10	10	10		
204	Ditto	W	eP	11	33	47	6											
			iS <sub>N</sub>									34 14						
			M									17						
			F									40±						
205	Ditto	W	M	11	47±													
206	Ditto	W	eP	11	47	50	2											
			iP									57						
			eE									48 13						
			iSE									22						
			M <sub>1</sub>									24						
			M <sub>2</sub>									34						
			F									12 00±	1.5	30	60	30		
207	Ditto	W	ePz	12	11	35					Aftershock of No. 195							
			eP <sub>H</sub>									38						
			iS <sub>H</sub>									12 03						
			iS <sub>Z</sub>									06						
			M									12 <sup>m</sup> 06 ~ 18						
F	15±	1.0	7	7	7													
208	Ditto	W	e	13	46±						Ditto							
209	Ditto	W	e	15	15	54					Ditto							
			S									17 22						
			F									18±						
210	Ditto		e	15	27	37					Ditto							
			F									29±						
211	Ditto		e	15	48	56					Ditto							
			S									49 22						
			F									51±						
212	Ditto	W	eP <sub>N</sub>	17	10	59												
			eS <sub>H</sub>									17 22						
			L									20.5						
			F									17.7						
213	Ditto	W	$\epsilon$	19	34	57												
			e									35 03						
			S									13						
			F									37±						

SEISMOLOGICAL BULLETIN

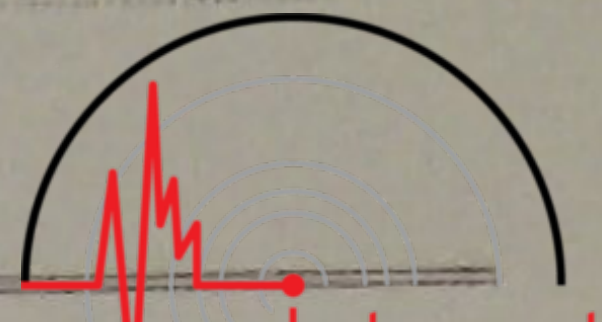


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No.	Date	App.	Phase	G.M.C.T			Period	Amplitude			Remarks			
								A <sub>E</sub>	A <sub>N</sub>	A <sub>Z</sub>				
				h	m	s								
				μ	μ	μ								
214	Nov. 2	W	ε	19	47±									
215	Nov. 2	W	ε	19	58±									
216	Nov. 3	W	ε	00	43±									
217	Nov. 3	W	ePz	02	40	32								
			ePR <sub>III</sub>			42								
			eS <sub>II</sub>		44	05								
			eSR <sub>III</sub>			41								
218	Nov. 3	W	ePz	15	24	44								
			εPN			52								
			iS <sub>II</sub>		25	11								
			F		27									
219	Nov. 3	W	eP	16	21	59								
			εS		23	46								
			F	16	40±									
220	Nov. 3	W	ε	20	00±									
221	Nov. 4	W	ePz	17	58	37.7								
			eS <sub>II</sub>	18	02	46								
			F		10±									
222	Nov. 5	W O	ePz	12	26	31								
			eLE		37.9									
			F	13	22.1									
223	Nov. 13	W	εPN	17	56	14								
			F		59±									
224	Nov. 14	W	ePEZ	}	04	29	40.0							
			εPN											
			iPz							44.5				
			iSEZ							55				
			eSN											
F		32±												
225	Nov. 15	W	iPz	}	01	43	16.0							
			iS							35.0				
			M							37				
			F						44±					
226	Nov. 15	W	iPz	}	14	36	06.5							
			iS <sub>H</sub>							23.0				
			F						38±					
227	Nov. 20	W	eP	}	14	26	35							
			iS <sub>N</sub>							52				
			eSEZ							39.1				
			eLE											
			F					15.2						
228	Nov. 20	W	e	}	21	26	13							
			F						29					
229	Dec.	W	ε	}	23	15±								
			F						20±					
230	Dec. 18	W	ε	}	10	06±								
			F						10.7					
231	Dec. 18	W	εPz	}	17	46	28							
			eP							35				
			iS <sub>N</sub>											
			εSE						47	04				
			eSz											
M		S~47.5												
F		54		1~2	5	7	5							
232	Dec. 21	W	eP	}	05	47	56							
			iz						48	03				
			iPNZ							05				
			ePE											
			eS							35				
			iS							40				
			iLNZ							54				
			εLN											
			M						49.0		6	70	small	100
			C						49.4					
F		06.1												

(M. M.)

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No.	Date	App.	Phase	G.M.C.T			Period	Amplitude			Remarks			
				h	m	s		$\Delta_E$	$\Delta_N$	$\Delta_Z$				
233	Dec. 22	W	eP <sub>EZ</sub>	13	08	38		$\mu$	$\mu$	$\mu$				
			$\epsilon P_N$					- $\epsilon$		- $\epsilon$				
			iP					+15	+7	+15				
			eS											
			m					50	5	50				
			eL <sub>EZ</sub>											
M														
C	10	00												
F	20						100	small	100					
234	Dec. 23	W	eP <sub>Z</sub>	10	52	49								
			e											
			L?											
F	54±													
235	Dec. 26	W	iP	01	43	36.8		-5	-3	-7				
			iP					+35	+10	+20				
			S											
			m					44	18	2.0		80	70	70
			L						25	6.0,4.5				
			M						35					
C	45	00				160	small	130						
F	02.0													
236	Dec. 29	W	eP <sub>Z</sub>	02	50	47								
			$\epsilon P_{ZN}$											
			S											
F	51	22												
				54										
237	Dec. 30		iP <sub>Z</sub>	04	42	50								
			S											
			F											
				43	06.5									
				51±										
238	Dec. 30	W	iP	06	22	04		+4.0	-2.0	-5	安藝町 微震			
			m					4	3	5				
			S											
			F											
				07.5										
				22.5										

-Finis-

(M. Miyamoto)